An Old Growth Strategy for British Columbia

• Old Growth Strategy Project • Ministry of Forests • May 1992 •

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FOREWORD

The Old Growth Strategy was prepared by a group of participants representing the views of citizen and environmental groups, forest industry associations, organized labour, researchers, provincial and federal resource agency staff, and individual professionals. The 18-month process of creating the strategy was largely one of consensus, and required many compromises in language to achieve a fair balance of viewpoints. The elements of the strategy were developed by five generally representative teams, who met both separately and in various combinations. Debates among us were extensive in our effort to ensure that our constituencies were well represented.

All of us involved in the project had to accept that not all of our individual or corporate views would prevail. We all agree, however, that recognition of old growth values and the development of an old growth strategy is a necessary and worthwhile endeavour if our environment and forest economy are to be sustained in the long term. We also believe that this draft strategy paper is a fair document from which to continue the process of improving our understanding and management of old growth forests.

A strategy paper of this kind is not the last word on the subject. It is offered to the public and the government as a working document. This means that it is open to continual refinement in response to changing context, as our knowledge of old growth forests improves, our social priorities change, and the structure of our resource management agencies develops.

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SUMMARY

The natural old growth forests of British Columbia represent a wide range of spiritual, ecological, economic and social values. As the original stands dwindle, we are challenged to manage them with increasing care to ensure that this heritage is not permanently lost. We are also challenged to renew our managed forests to reflect attributes and values which a study of old growth has revealed to be biologically important. Successful treatment of these critical issues requires a widely supported and comprehensive strategy.

The purpose of the Old Growth Strategy is to provide a framework for managing old growth forests in British Columbia. The strategy identifies the forest values inherent in old growth and the manner in which old growth can be conserved, through reservation of representative areas and through forest management practices on intensively managed lands.

The strategy indicates: how old growth can be defined, how inventories can be improved, what research needs to be conducted, how old growth values can be negotiated, how reserves can be established, how management practices can be modified, what organizational structures are required, and what actions need to be taken over the next three years.

The Old Growth Strategy is a blueprint for action that will involve resource managers and broadly representative stakeholders in conserving old growth values in an environmentally, socially and economically responsible manner.

DEFINITION OF OLD GROWTH

Old growth forests are natural stands of old and young trees and their associated plants, animals, and ecological relationships which have remained essentially undisturbed by human activities. In practice, this general definition requires extensive refinement to reflect ecological diversity within British Columbia, research into the dynamics of old growth ecosystems, and specific structural features which can be used to characterize old growth stands for purposes of inventory and management.

The old growth strategy identifies the current state of old growth definitions and presents an action plan for the studies required to improve them over the next three years.

INVENTORY OF OLD GROWTH

Existing forest resource inventories are limited in the amount of information they contain about the extent and distribution of old growth forests throughout the ecological zones of the province. While the traditional forest inventory, aerial photographs and more recent satellite information are useful starting points, inventories of old growth and its complex of associated resources are not yet able to determine the full extent, the status of protection and the rarity of particular types that is necessary for detailed management.

The old growth strategy provides a three year action plan for improvement of forest resource inventories, maps and data bases to support the intensive management efforts necessary to achieve the proposed conservation and management objectives.

IDENTIFICATION OF VALUES

Old growth values are diverse and are expressed in terms which do not always lend themselves to traditional measures of equivalence. Spiritual and aesthetic values derived from the experience of undisturbed old growth are difficult to balance in practice, for example, with values which can only be derived by consumption and measured in economic terms.

The old growth strategy identifies the principal values inherent in old growth and presents a consensus-building negotiation process among stakeholders as a means to accommodate divergent interests in a fair and equitable manner. The process of consensus building is to be administered by a neutral agency responsible for facilitating negotiations among stakeholders and supervising the accounting and technical analysis of the range of values. The strategy proposes that old growth values be recognized by and incorporated within a comprehensive land use strategy for the province which is prepared by the neutral agency with extensive stakeholder involvement.

A CONSERVATION FRAMEWORK

An old growth conservation framework is needed to combine research, inventory, land use planning and forest management practices into a single system to conserve old growth values. The strategy proposes a framework which has two main components: a process to establish reserves, and guidelines for forest management practices.

The old growth strategy presents a process for developing a system of reserves that will protect old growth ecosystems representing the ecological diversity of the province and the full range of old growth values. The reserves would be of sufficient size to ensure their ecological integrity and would be incorporated into the existing land use designations of parks, ecological reserves, wilderness areas and wildlife management areas. Priority is to be given to identifying and protecting scarce forest types that are not now adequately represented in protected land categories. Areas that were deferred from development during preparation of the strategy would also receive priority treatment.

Selection and proposal of potential reserves would result from comprehensive joint planning exercises at the regional and local level. The social and economic costs of putting aside reserves must be assessed before major commitments are made.

Outside reserve areas, two broad objectives for land use are recognized: special management and commodity emphasis. In special management areas, old growth attributes would be managed through forest practices designed to conserve attributes that support old growth dependent resources. In commodity emphasis areas, cost effective forest practices would be developed to ensure maintenance of long term productivity of the ecosystems that support intensive economic activity. Management practices would also ensure that the reserves and special management areas do not exist in biological isolation. Forest management practices must be assessed for their effectiveness in conserving old growth values.

The old growth strategy presents a detailed plan for developing the "toolkit" of information, guidelines, analytical procedures and involvement processes that will be needed to implement reserves, to improve landscape planning, and to improve forest management practices over the next three years within each forest district in the province.

ORGANIZATIONAL STRUCTURE AND PLANNING PROCESSES

A cooperative, inter-agency planning and management process is required to implement the old growth strategy. The process should engage both resource agency managers and stakeholders concerned with old growth values in joint planning at the provincial, regional and local levels.

In the short term, the old growth strategy proposes the formation of **Old Growth Working Groups** at the provincial, regional and local levels with specific terms of reference requiring implementation of reserves and refinement of management practices over the next three years.

These groups are to be supported by a **Specialist Task Force** of technical personnel and stakeholders who are charged with the research and design functions specified in the strategy. **The Provincial Old Growth Working Group** is led by the **Interministry Management Committee** which has presided over development of the old growth strategy.

In the long term, the strategy proposes a legislated **Land Use Body** with provincial, regional and local branches. Each of these branches is responsible for incorporating old growth values into land use allocations and integrated resource management. The specific structures proposed and the duties assigned to them are intended to be consistent with the eventual framework of land use bodies that may arise from the recommendations of the Forest Resources Commission, the Round Table on the Economy and the Environment, and the recently introduced Commission on Resources and Environment.

THREE YEAR IMPLEMENTATION PLAN

A three year plan is presented for implementation of the old growth strategy. It includes specific actions to set up the necessary short term structures; to initiate the public involvement processes; and to accomplish priority tasks at the provincial, regional and local levels. For each task a team from the specialist task force is identified as the source of technical support to the regional and local working groups.

SUPPORTING DOCUMENTATION

The old growth strategy has been developed by 90 people organized into 5 teams which focussed on ecological research and inventory, management practices, conservation of areas, old growth values and policy development. The full consensus reports of these teams, the **Old Growth Strategy Background Papers,** is available as a companion piece to the strategy. In addition, the research papers and consultant reports prepared for the strategy project are listed and will be made available to those interested.

SHORT TERM DEFERRAL OF RESERVE CANDIDATE AREAS

During the preparation of the strategy, a limited process was conducted for deferral of publicly identified stands of old growth that were potentially suitable for reservation but were scheduled for development within two years. Areas which were designated for deferral must be reviewed by August 1, 1992 for their suitability for inclusion in the long term framework of reserves to be established within each forest district. The short term deferrals represent only a small beginning in the identification of candidates for long term reservation. The process and its results are described in detail in an appendix which is available in the same volume as the Background Papers.

OLD GROWTH STRATEGY IMPLEMENTATION SCHEDULE

	1989 - 1991	1991 - 1992	1992	1992 - 95
STRATEGY DEVELOPMENT	Write the strategy.	Publish for public and professional review.	Incorporate feedback into revised strategy.	Implement full 3 year plan.
RESEARCH AND INVENTORY	Initiate research and improvement of definitions and inventory.	Begin work on ecological, social and economic research. Develop inventory.	Continue R & D work to support reserves and management practices.	Commission major ongoing research and inventory projects.
WORKING GROUPS	Establish and support the 5 Old Growth Project teams.	Establish the Specialist Task Force to prepare support system.	Develop O.G. Working Groups at provincial, regional and local levels.	Support work of O.G.W.G.'s conducting reserve framework and management practices introduction.
RESERVES	Develop criteria for reserve selection. Identify and defer limited number of critical areas.	Re-define criteria for reserves and brief field staff.	Work with O.G.W.G.'s to ensure operational function to identify and propose reserves.	Incorporate deferrals and new proposals into long term framework.
MANAGEMENT PRACTICES	Review existing management practices and develop new alternatives.	Re-define management practices guidelines and brief field staff.	Introduce landscape planning and management practices guidelines.	Field test and assess planning and practices.

1. STATEMENT OF PURPOSE

The purpose of the Old Growth Strategy is to provide resource planners and managers with a framework for managing old growth forest ecosystems in British Columbia. The framework integrates management considerations for the full spectrum of old growth forest values present in all ecological zones, and has been developed through the co-operation of users from all sectors for the benefit of present and future generations.

The strategy embraces the many ecological, economic and social values associated with old growth forest ecosystems. These include but are not limited to: biological diversity; wildlife and fisheries habitat; fibre and mineral values; community stability; recreation and tourism; water quality and quantity; scientific, genetic and educational values; and cultural, wilderness, spiritual, aesthetic, existence and bequest values.

The strategy identifies opportunities for old growth management, including the reservation of significant areas of old growth forest ecosystems in their natural state; the carry-over of selected old growth attributes into, or their creation within, young managed forests; and the conversion of old growth forests to new forests.

1.1 THE OLD GROWTH STRATEGY MAKES OVERALL RECOMMENDATIONS FOR:

- **The values** represented by old growth that should be recognized and protected.
- **The public involvement** and decision-making process that should be used to ensure that the old growth values are incorporated in land use planning and resource management.
- **The conservation framework** that will ensure both protection of representative stands of old growth and the application of suitable resource management practices that conserve old growth values outside of protected areas.
- **The research and inventory and socio-economic analyses** that should be done to inform all parties responsible for implementing the strategy.
- **The organizational structure and planning processes** of administrative bodies, along with the stakeholder involvement to deliver the strategy.

1.2 LINKAGES BETWEEN THE OLD GROWTH STRATEGY AND OTHER LAND AND RESOURCE MANAGEMENT INITIATIVES

Recommendations of the Old Growth Strategy must be integrated with many other government sponsored land and resource management initiatives. There are at least five categories of existing activity where Old Growth recommendations appear to link with provincial bodies, projects or standing committees. **Plates 1 and 2 illustrate the likely connections among the existing initiatives and where the Old Growth Strategy fits.**

The following list is presented as a guide to the purpose of each category of activity and the major participants in each one.

1.2.1 *Policy, Structure and Public Process:*

These activities are designed to identify public values, set overall goals, provide structures and processes, and integrate the various initiatives.

- Cabinet through the Cabinet Committee on Sustainable Development (CCSD)
- Commission on Resources and Environment (CORE)
- Roundtable on Environment and Economy
- Forest Resources Commission
- **Old Growth Strategy:** *Values, and Organizational Structures and Planning Processes*

1.2.2 *Land Use Planning:*

These activities are designed to allocate land and associated natural resources to designated uses. They incorporate the provincial strategy for protected areas. Within these activities there are major planning processes and affiliated initiatives:

- Commission on Resources and Environment
  - Log Around initiative (started by the Ministry of Forests)
  - Provincial Land Use Strategy and Regional Land Use Plans
- Protected Areas Committee
  - Parks and Wilderness for the 90's
  - **Old Growth Strategy**: *Conservation of Areas, Inventory Requirements*
- Forest Resources Commission
- Agricultural Land Commission
- Land Claims Implementation Group
- Roundtable on the Environment and Economy
- Forest Land Management Plans (FLMP)

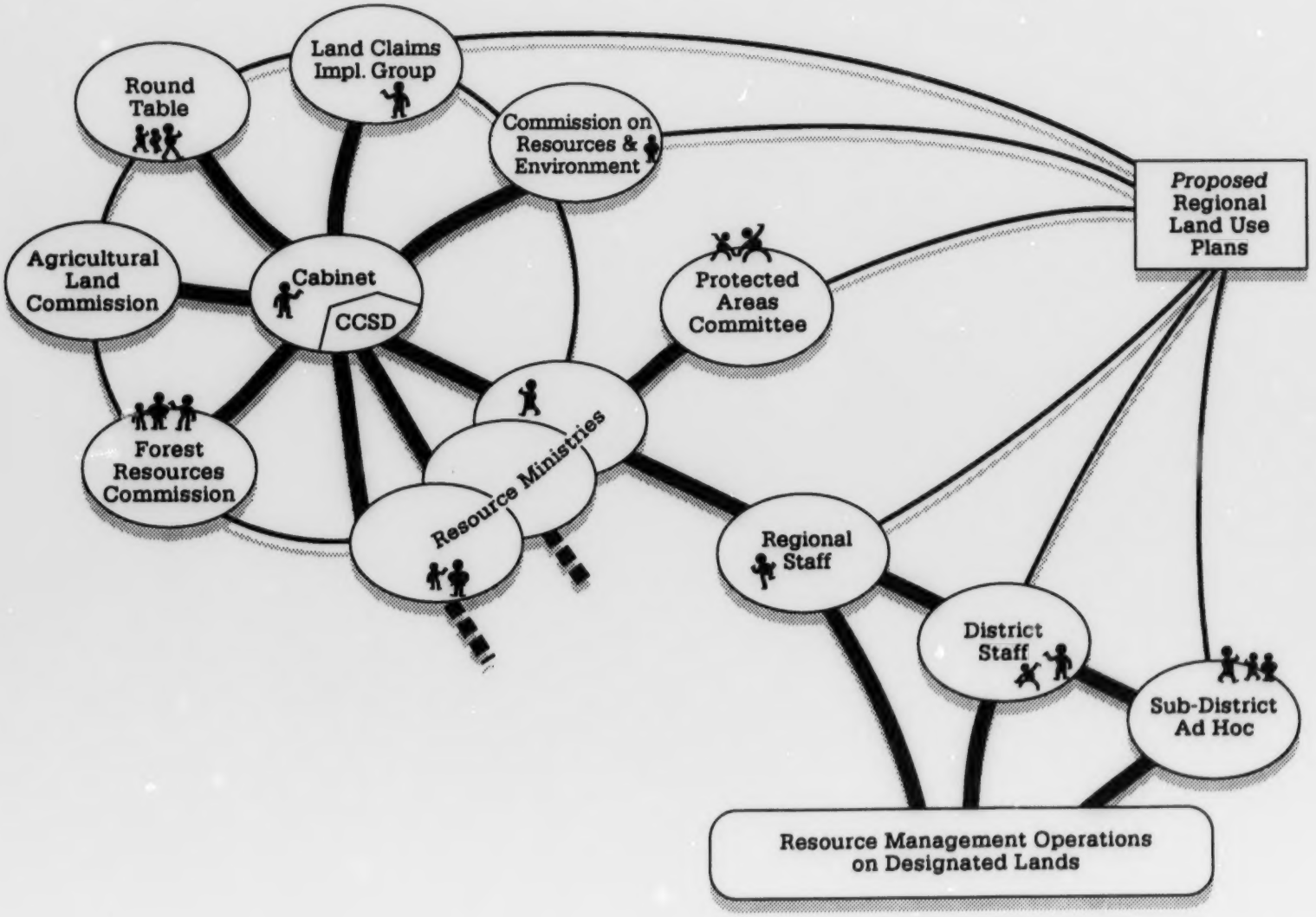

Plate 1: Land and Resource Use Planning Structures in British Columbia (not showing initiatives and projects), May 1992.

1.2.3 *Resource Management Practices*

These activities are designed to improve resource management practices through sensitivity to the full spectrum of resources and their associated values.

- Forest Resources Commission
  - Forest Practices Code
- **Old Growth Strategy**
  - *Management Practices, Research Agenda*
- Provincial Fish, Forestry, Wildlife Committee
  - Resource Management Guidelines

1.2.4 *Integrated Resource Planning*

These activities are designed to increase the level of cooperation among responsible agencies.

- Inter-agency Forest Land Management Planning (FLMP)
- Local Resource Use Plans (LRUP)
- **Old Growth Strategy**: *Organizational Structure and Planning Processes*

1.2.5 *Research and Resource Inventory*

These activities are designed to improve the information base, documentation and impact analyses that support all the other initiatives.

- Coordinated Resource Inventory Initiative (CRII)
- Resource Inventory Committee (RIC)
- **Old Growth Strategy**: *Research and Inventory Agenda, and Specialist Task Force*

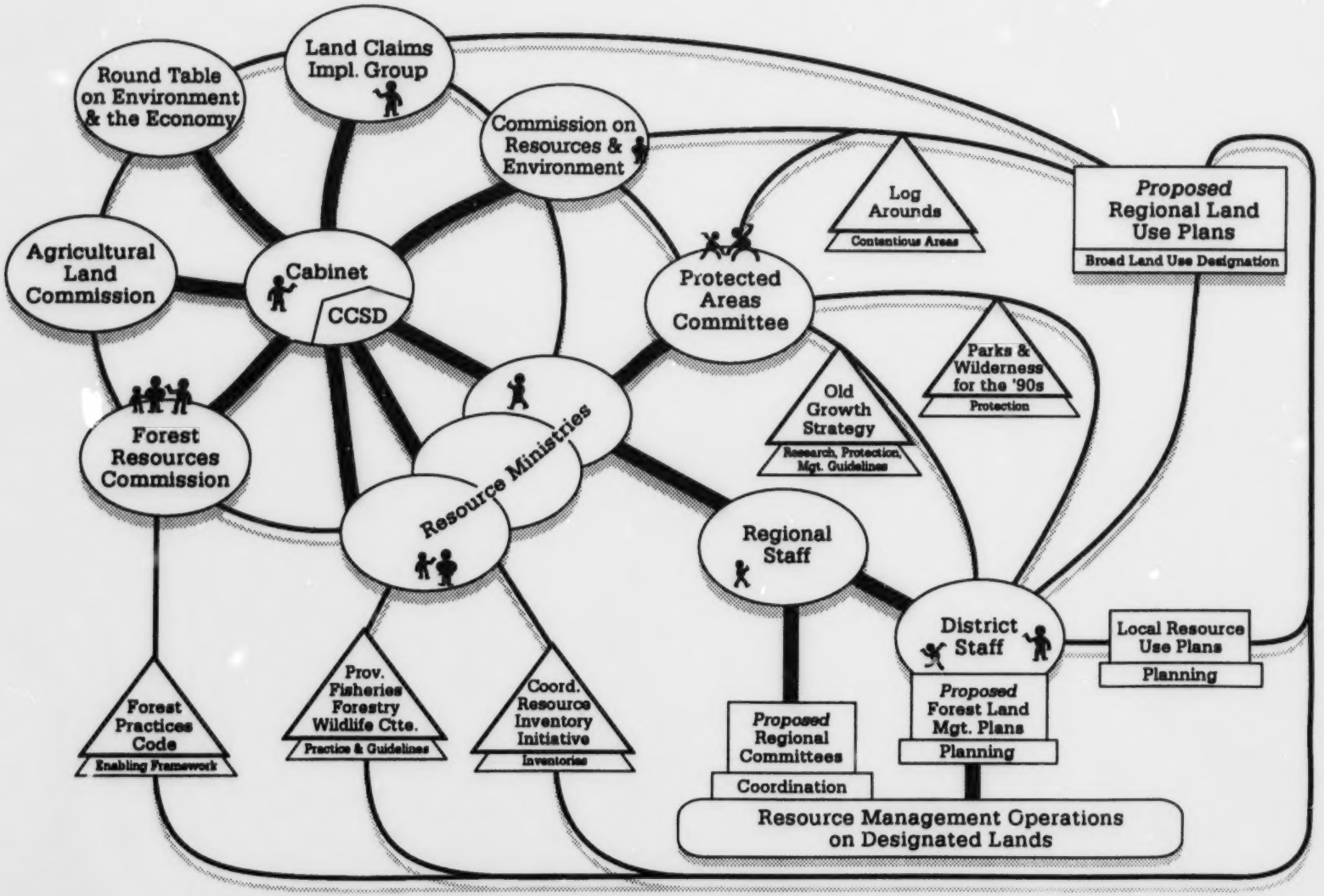

Plate 2: Land and Resource Use Planning Structures in British Columbia including initiations and projects (shown in triangles), May 1992.

2. UNDERLYING PRINCIPLES

The recommended actions of the Old Growth Strategy are based on these general principles:

IMMEDIATE IMPLEMENTATION

- While some parts of the strategy will require development of new systems and structures by government, elements of the strategy are capable of immediate implementation through initiatives taken within the existing management systems.

INTERMINISTRY CO-OPERATION AT ALL LEVELS

- Short-term action to implement some aspects of the strategy can begin immediately at the provincial, regional and local levels through co-operative interagency mechanisms that do not require formal legislation. Long-term action will be aided by the development of formal land use bodies with legislated mandates and standard procedures to involve stakeholders.

STAKEHOLDER INVOLVEMENT

- Planning and decision-making on old growth matters should involve stakeholders and resource managers in partnerships at provincial, regional and local levels co-operating in a "top-down-bottom-up" process of communication and consensus-seeking negotiation.

REFINEMENT OF KNOWLEDGE OVER TIME

- Implementation of the strategy should begin with the existing stock of research, inventory and land use information. The information base for all old growth related resources, the old growth conservation framework, and forest management practices should be refined over time. This can be accomplished through a process of continued social, ecological and economic research, inventory, and field trials.

INCORPORATION IN FORMAL PLANNING DOCUMENTATION

- Responsibilities for old growth management under the strategy are to be incorporated wherever possible into existing forest and land use planning processes, including Forest Land Management Plans, Tree Farm Licenses, Allowable Annual Cut determinations, license agreements, 5-year Development Plans, Management and Working Plans, Pre-Harvest Silvicultural Prescriptions, and Protected Area system plans.

SOCIAL AND ECONOMIC ASSESSMENT

- Proposed actions under the strategy must be assessed before they are implemented for their impact on the economic security of resource dependent communities, on the economic viability of industry and workers, and on provincial government revenues and the provincial economy.

CONCERN FOR WORKER SAFETY

- Management practices adopted to conserve old growth attributes in commercial stands must be developed in consultation with the Workers' Compensation Board, industry and labour.

COMPREHENSIVE LAND USE STRATEGY

- Land allocations to develop the framework of reserved areas and to secure land for timber harvesting should occur within a comprehensive land use strategy for the province, one which integrates the recommendations of all current land and resource review bodies—for example, the Commission on Resources and Environment, the Round Table on the Environment and the Economy, and the Forest Resources Commission.

USE OF EXISTING LAND DESIGNATION SYSTEMS

- Old growth areas to be reserved should fit into the existing systems of land use designation, including Parks, Ecological Reserves, Wilderness Areas, Recreation Areas, and Wildlife Management Areas, and should complement those already designated.

RESERVES CONSISTENT WITH THE SPECTRUM OF VALUES

- The land to be reserved for old growth within any geographical or administrative unit should be determined on the basis of the ecological, economic, and social values present as well as by resource management objectives agreed to through a process of negotiation.

3. INTRODUCTION

3.1 THE ISSUES

Members of the public, public interest groups, professional resource managers and representatives of industry have expressed increasing concern about the management of old growth forests in British Columbia. Not only does the forest industry depend heavily on old growth for its current wood supply, but many new demands are being placed on the remaining old growth to satisfy a broad range of forest values. In parts of the province, meanwhile, opportunities to reserve representative samples of old growth are dwindling rapidly. These pressures are leading to increased instances of conflict among supporters of competing land uses.

3.2 THE PROJECT

To structure the debate on old growth, to inform all parties with basic information, and to develop an overall management approach, the Ministry of Forests, in co-operation with the then Ministries of Lands and Parks, Environment, and Development, Trade and Tourism, undertook in November 1989 to develop an old growth management strategy. Ninety people from government, public, labour, industry, universities and consulting firms spent 18 months of research, discussion and writing to achieve this goal. A synthesis of the information and recommendations are presented here as a contribution to an ongoing process of public discussion and government decision-making. The complete set of background papers is available from the Integrated Resources Branch of the Ministry of Forests.

3.3 INTERMINISTERIAL SUPPORT

The Old Growth Strategy project was given interministerial support by the Provincial Cabinet through an Interministry Management Committee, chaired by the Chief Forester, and with funding allocated from the budget of the Ministry of Forests (**Figure 1**—with current Ministry names indicated).

Five working teams were formed, and each team was provided with a chairperson from a participating government ministry. This structure was designed to provide participants with access to resources, continuity of records, and agency understanding of the strategy. The teams received funds to commission independent research, hire staff support for meetings, and pay travel expenses for the public representatives.

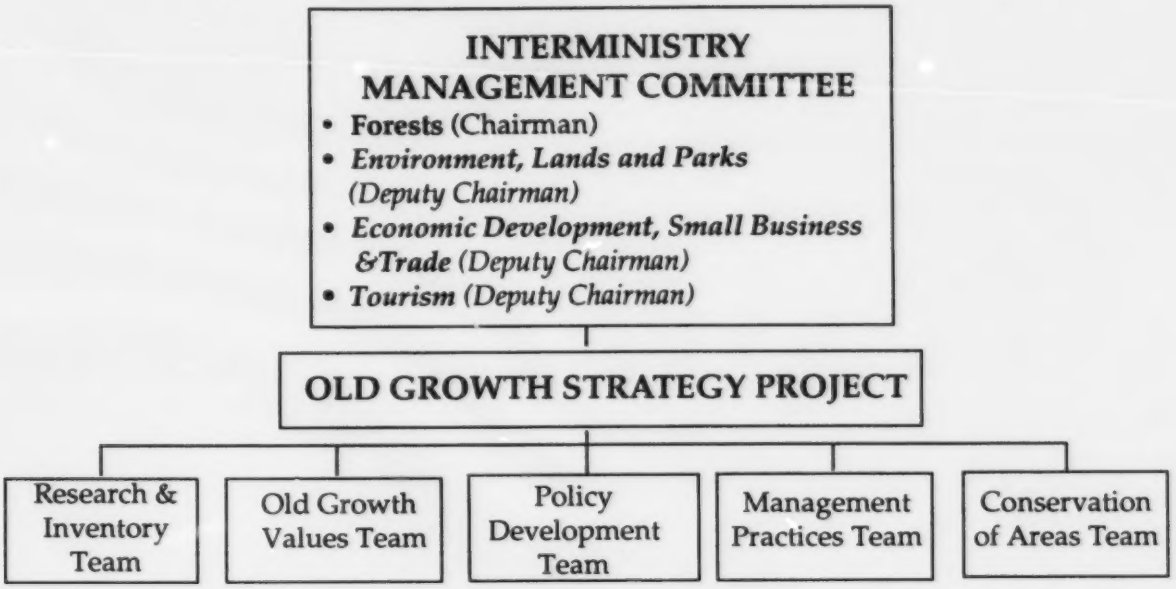
INTERMINISTRY MANAGEMENT COMMITTEE
• Forests (Chairman)
• Environment, Lands and Parks (Deputy Chairman)
• Economic Development, Small Business &Trade (Deputy Chairman)
• Tourism (Deputy Chairman)
OLD GROWTH STRATEGY PROJECT
Research & Inventory Team
Old Growth Values Team
Policy Development Team
Management Practices Team
Conservation of Areas Team

Figure 1: *Organizational Chart of the Old Growth Strategy Project*

3.4 TERMS OF REFERENCE

The members of each project team represented a range of old growth interests. The teams were given broad terms of reference and invited to refine them by consensus into detailed objectives and work plans from which recommendations could be made for:

- improving the definition, the state of ecological research and the inventory of old growth forests;
- articulating and measuring old growth values and incorporating them into land and resource management decisions;
- identifying and applying forest management practices to conserve old growth attributes in the commercially managed forests lying outside reserves;
- developing a framework for reserving old growth forest areas representative of the ecological zones of the province; and
- developing a structure and process for implementing the strategy within relevant legislation, regulations, policy and planning processes.

3.5 THE PUBLIC INVOLVEMENT PROCESS

The project involved 90 participants distributed among the five working teams. Public and industry project members were delegated by their organizations; the various technical experts were invited by project staff on the basis of demonstrated interest and the need for all relevant disciplines to be represented. The teams were supported by 30 additional people, including technical and managerial staff members of government departments, consultants and university student volunteers. Those who withdrew were replaced with representatives from the same interest area.

Native representatives attended at the beginning of the project, but withdrew early and declined to send replacements. All members of the project wanted to have Native participation, but respected that group's decision not to be directly involved at this time, when participation in provincial land use initiatives might conflict with ongoing land claim negotiations.

During the initial strategy drafting phase, the project used several methods to make information available to the public and to invite their involvement:

- Project bulletins were sent out through an extensive provincial mailing list to interested organizations and individuals.

- Participants in the project teams were drawn from interest groups whose own internal bulletins and information systems are being used to gather public response to the ideas arising within the project.

- Press releases on progress to date were issued by the Minister of Forests.

- Interested environmental and industry organizations and members of the public were invited to submit candidate areas for short-term deferral and to request review of the interim recommendations on potential deferral areas.

- Representative teams visited seven coastal and interior resource-dependent communities: Campbell River, Salmon Arm, Nelson, Williams Lake, Prince George, McBride and Terrace. During the visits, discussions held with municipal councils, individuals and interest groups gave the project insights into the concerns of non-metropolitan communities over old growth management. Many of the discussions dealt specifically with community concerns surrounding the deferral process. These discussions assisted the five working teams to assess the direction and accuracy of their work.

3.6 LIAISON WITH OTHER PUBLIC INITIATIVES ON LAND USE

The Interministry Management Committee has been responsible for official liaison with the Forest Resources Commission and the Round Table on the Environment and the Economy. Through overlapping membership and participation in public meetings, members of the Old Growth Strategy Project have maintained contact with the Commission, the Round Table, the Parks and Wilderness for the 90's System Plan, Dunsmuir II, Endangered Spaces, and the Resource Management Planning Areas initiative of the Ministry of Forests.

3.7 SHORT-TERM DEFERRAL OF CRITICAL OLD GROWTH STANDS FROM HARVEST

The most contentious area of work by the project has been the short-term deferral of areas. Deferral of critical areas of old growth, especially the few remaining intact wilderness drainages and increasingly rare forest types, was seen by the environmental community as an essential starting point for the project. A number of individuals felt that the project could not proceed legitimately if rare or unfragmented old growth forest types that might become part of an eventual reservation framework were compromised while the strategists talked. Other parties in the project were concerned that the early attempt to define areas for any form of interim reserve status would either compromise the long-term agenda or inadequately reflect immediate economic and social impacts on forest licensees and their dependent communities.

With some apprehensions, the project participants entered a process of identifying candidate areas for short-term deferral. The announced purpose of deferral was to preserve options for including areas in a long-term framework of reserves. Deferrals last from August 1, 1990 to August 1, 1992.

The extremely short time in which this deferral process had to be developed did not allow sufficient time for thorough public response to deferral proposals, communication with licensees and resource managers, or trouble shooting of specific cases. As a result, there was some misunderstanding of the reasons for, and the significance of, deferrals and their relationship to the eventual strategy. In future, longer and more effective consultation would be needed if a similar process were pursued.

A complete description of the deferral process and its documented results are presented in the Old Growth Strategy Background Papers.

3.8 ONGOING CONCERNS ABOUT THE CONSENSUS MODEL

The Old Growth Strategy refers frequently to the use of consensus-building negotiation as a primary approach to involving stakeholders in the decision-making process. This recommendation comes at a time when consensus approaches are being widely debated and trial cases are being conducted. Concerns raised by project members about the applicability of consensus to all levels of old growth decisions include:

- What criteria should be used to qualify stakeholders for participation?
- How does stakeholder participation in consensus decisions with resource managers affect formal accountability for results?
- How practical is consensus building under pressures of time, especially at the level of field operations?
- How can impasse within the consensus-building group be resolved or consensus decisions be appealed?
- How can consensus methods be developed and described to make them applicable over the wide variety of land and resource use decisions for which they are being prescribed?

Initial thoughts on how to answer these questions are presented in the following chapters. Project members themselves have varying degrees of comfort with the current level of thinking on consensus; therefore this section is presented in a shaded box to indicate that it is an unresolved issue with the Old Growth Strategy Project members.

4. DEFINING OLD GROWTH[1]

4.1 FOCUS

Old growth forests are natural stands of old and young trees and their associated plants, animals and ecological relationships, which have remained essentially undisturbed by humans. In practice, this "popular definition" must be refined by a technical and scientific understanding of old growth's species composition, structural characteristics and ecological functions.

Specific ecological definitions are needed to describe structural and functional attributes, age and disturbance criteria, species composition, and minimum area of old growth. To develop these, research is needed to close the critical gaps in our knowledge of:
- **age structure and natural disturbance intervals;**
- **species composition**
- **forest canopy structure and the role of dead or decaying trees; and**
- **minimum area requirements for representative and sustainable old growth forests.**

Priority for definitions will go to forest types that are poorly represented in parks and reserves or becoming increasingly scarce as a result of harvesting and development.

As well, an index of "old growthness" will be devised and used to discriminate between different classes of old growth—for example, those old growth stands that have all the defined ecological attributes, and those that have only some. An index recognizes the problem with applying a rigid definition to a continuum of stand conditions.

4.2 RATIONALE

A single definition of old growth cannot serve all purposes. Rather, definitions are needed to reflect the ecological diversity of British Columbia and the status of our knowledge and data bases. They should be considered at three levels:
- conceptual
- working
- ecological

The **conceptual definition** provides a generic description of the type of forest covered by the strategy. For this purpose, the Old Growth Strategy Project has adopted the definition of the Forest Land Use Liaison Committee, presented in March 1990:

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[1] Scientific references to ideas drawn from the literature are cited in the original consensus reports of the Old Growth Background Papers.

Old growth is a forest that contains live and dead trees of various sizes, species composition and age class structure that are part of a slowly changing but dynamic ecosystem. Old growth forests include climax forests, but do not exclude sub-climax or even mid-seral forests. The age and structure of old growth varies significantly by forest type and from one biogeoclimatic zone to another.

The age at which old growth develops the specific structural attributes that characterize old growth will vary widely according to forest type, climate, site characteristics and disturbance regime. However, old growth is typically distinguished from younger stands by several of the following attributes:

- *large trees for species and site*
- *wide variation in tree sizes and spacing*
- *accumulations of large size dead standing and fallen trees*
- *multiple canopy layers*
- *canopy gaps and understory patchiness*
- *decadence in the form of broken or deformed tops or boles and root decay.*

Working definitions are needed to identify old growth forests according to existing forest cover data. These are inherently incomplete as they include information about trees only. These definitions are for specific forest types and include minimum age and dominant tree species composition. **Table 1** shows minimum age criteria for broad coniferous forest cover types in British Columbia. These estimates are based on expert opinion and will be refined through further research. Forests dominated by deciduous trees (e.g. Garry oak, aspen, and cottonwood) may also have old growth stages that should be recognized.

Ecological definitions are needed to characterize old growth attributes required for inventory, research and management. These definitions include such attributes as the number of dead standing trees—"snags"— the amount of downed woody debris, tree size, and canopy structure. They can also include information about total species complements.Although a diversity of structural attributes is key to maintaining the compositional and structural roles of old growth, not all attributes necessarily apply to each biogeoclimatic zone. Preliminary ecological definitions are being developed for 3 of the 12 forested biogeoclimatic zones in British Columbia.

Old growth forests may also be defined according to non-ecological attributes such as aesthetic, recreational, economic and other human values (see Section 5). There will be an inventory requirement for these attributes to represent the full spectrum of old growth values.

Although tremendous effort has been under way for several years to classify the forests of British Columbia according to the biogeoclimatic system, this work has not focussed on defining old growth. Existing data can be used to help characterize it, but additional field studies and data analyses are needed to develop ecological definitions of old growth for the diverse forest types in each biogeoclimatic unit.

Table 1: Working Definitions (using minimum age criteria) for Broad Forest Cover Types in British Columbia. Forests younger than this minimum age are unlikely to be considered old growth.

COASTAL CONIFEROUS OLD GROWTH TYPES

Tree species	Common name	Major forested biogeoclimatic zones	Minimum age (yr)
Abies amabilis	amabilis fir	CWH, MH	200
A. lasiocarpa	subalpine fir	MH	200
Chamaecyparis nootkatensis	yellow-cedar	CWH, MH	200
Picea sitchensis	Sitka spruce	CWH	150
Pseudotsuga menziesii	Douglas-fir	CDF, CWH	150
Thuja plicata	western redcedar	CDF, CWH	150
Tsuga heterophylla	western hemlock	CWH, MH	150
T. mertensiana	mountain hemlock	MH	200

INTERIOR CONIFEROUS OLD GROWTH TYPES

Abies lasiocarpa	subalpine fir	all but IDF, PP	200
Larix lyallii	alpine larch	ESSF	200
L. occidentalis	western larch	ICH, IDF, MS	150
Picea engelmannii	Engelmann spruce	ESSF, MS	150
P. engelmannii x glauca	hybrid white spruce	ICH, IDF, SBS	150
P. glauca	white spruce	BWBS, SWB	150
Pinus albicaulis	whitebark pine	ESSF, PP	200
P. contorta	lodgepole pine	all	120
P. monticola	western white pine	CWH, ICH	150
P. ponderosa	ponderosa pine	IDF, PP	150
Pseudotsuga menziesii	Douglas-fir	ICH, IDF, MS, PP, SBS	150
Thuja plicata	western redcedar	ICH, IDF	150
Tsuga heterophylla	western hemlock	ICH	150

In addition to the structural parameters which define old growth, there is a need to develop knowledge of the species composition of old growth forests. As knowledge is acquired, the definitions of old growth will become increasingly concise.

Because they provide particular microclimates or structural features (e.g. large woody debris, snags), old growth forests afford the best habitat for many plants and animals. For some species, such as arboreal lichens, saprophytic plants, and animals such as spotted owls, caribou and black-tailed deer, the reasons for their strong association with old growth are well understood. For other species the strong association is evident but the reasons are less clear. Currently, 80 species of terrestrial vertebrates in B.C. are recognized as being closely associated with or dependent on old growth forests. These include 8 "red-listed" species under consideration for designation as threatened or endangered and 16 "blue-listed" species. These "blue-listed species are so designated by B.C. Fish and Wildlife if they are sensitive or vulnerable, have shown a major population decline, or their numbers and distribution are poorly known. **Table 2** summarizes red- and blue-listed wildlife species closely associated with or dependent on old growth forests.

Table 2: Wildlife Species with a Degree of Dependence on Old Growth Forests.

STATUS	DEPENDENCE RATING	WILDLIFE SPECIES
Reptiles and Amphibions, Total (8), Status (1 red, 2 blue)		
RED	*attribute dependent*	Sharptailed Snake
BLUE	*attribute dependent*	Pacific Giant Salamander, Tailed Frog
YELLOW & GREEN	*attribute dependent*	Rough-skinned Newt, Clouded Salamander, Ensatina Salamander, Northwestern Salamander
Birds, Total (41), Status (3 red, 7 blue)		
RED	*forest dependent*	Spotted Owl, Marbled Murrelet
	attribute dependent	Flammulated Owl
BLUE	*forest dependent*	Ancient Murrelt
	attribute dependent	White-headed Woodpecker, Williamson's Sapsucker, Blue Heron, Bald Eagle, Gray-cheeked Thrush (suspected dependent), Lewis's Woodpecker
YELLOW & GREEN	*forest dependent*	Vaux's Swift, Black-backed Woodpecker, Boreal Owl (suspected forest dependent)
	attribute dependent	American Kestrel, Blue Grouse, Brown Creeper, Barrow's Goldeneye, Bufflehead, Hermit Thrush, (suspected dependent), Pileated Woodpecker, Osprey, Chestnut-backed Chickadee, Clark's Nutcracker, Common Merganser, Gray Jay, Great Gray Owl, Hairy Woodpecker, Northern Goshawk, Northern Three-toed Woodpecker, Olive-sided Flycather, Pygmy Nuthatch, Red Crossbill, Red-breasted Nuthatch, Red-breasted Sapsucker, Spruce Grouse, Townsends Warbler, Varied Thrush, Western Flycatcher, White-breasted Nuthatch, Wood Duck, Hooded Merganser.
Mammals, Total (28), Status (4 red, 7 blue)		
RED	*forest dependent*	Cascade Mantled Ground Squirrel,
	attribute dependent	Keen's Long-eared Myotis, Fringed Myotis Western, Small-footed Myotis
BLUE	*forest dependent*	Caribou (souther populations), Roosevelt Elk
	attribute dependent	Grizzly Bear, Mountain Beaver, Northern Long-eared Myotis, Shrew-mole, Trowbridge's Shrew
YELLOW & GREEN	*forest dependent*	Black-tailed Deer (in deep snow belts), Mule Deer (forest dependent in severe winters), Moose (coastal populations are forest dependent in severe winters in deep snow areas). Mountain Goat (coastal populations are dependent in severe winters)
	attribute dependent	Marten (dependent in some deep snow areas), Big Brown Bat, Silver-haired Bat, Black Bear (denning), Long-legged Myotis, Northern Flying Squirrel, River Otter, Western Long-eared Myotis, Wolverine, Yuma Myotis, California Myotis, Little Brown Myotis

Forest dependent *means species need intact old growth at the forest landscape level.*

Attribute dependent *means species need old growth forest attributes such as large diameter dead trees and coarse woody debris carried forward into second growth forests in sufficient quantity to support that population, these attributes can be maintained by special management at the stand level.*

* *Sources are fully referenced in the Old Growth Background Papers*

4.3 RECOMMENDATIONS

We recommend the following actions:

- Complete working definitions of old growth for inventory and mapping purposes.
  - Refine interim definitions (year one).
  - Complete final definitions (year two).

- Develop specific ecological definitions of old growth by biogeoclimatic zone and ecosystem, complemented by an index of "old growthness," for research, management and future inventory purposes.
  - Develop interim index and definitions (year two).
  - Refine definitions and index based on inventory data (year three).
  - Complete first approximation detailed definitions and index (year three).

- Additional research requirements would also be needed. Research strategies should be developed and studies begun on the following long-term topics (years one to three):
  - the distribution and abundance of British Columbia's plants, flora and fauna, with known or suspected dependence on older forests;
  - natural disturbance regimes for major forested ecosystems;
  - the functional importance of certain old growth attributes, such as snags and coarse woody debris, in British Columbia's diverse forest types;
  - appropriate landscape reserve designs, and the effects of alternative approaches, including retention of old growth attributes in managed forests;
  - quantification of the degree of old growth forest fragmentation and the implications of this fragmentation;
  - detailed ecosystem mapping for critical areas to evaluate ecosystem-level biological diversity;
  - operational techniques and guidelines for alternative forest management practices to maintain or recreate old growth attributes;
  - suitability of various silvicultural systems for maintaining old growth features and long-term site productivity.

5. INCORPORATING OLD GROWTH VALUES

5.1 FOCUS

To ensure that old growth values are adequately included in resource management decisions, and to help reconcile diverse values, existing and proposed forest planning processes dealing with old growth should consider using consensus-building negotiations amongst the agencies and interests involved.

All interests must be represented within this consensus process. While technical analysis and information are essential for sound old growth management decisions, it is imperative that the assumptions underlying the analysis and information be explicit and agreed to by participants in this decision-making process.

5.2 RATIONALE

The current debate over management of old growth forests is a reflection of our inability to derive all values from the same stand of old growth at the same time. Some values require the preservation of old growth; others require its consumption. These basic conflicts are compounded as the relative importance of different values changes in response to new information, market shifts, increasing scarcity and changing social preferences.

The Values Team has concluded that it may be possible to manage old growth in a manner that optimally accommodates all values and the individuals who hold them; however, this presents a significant challenge. The complexity of this challenge is increased by our inability to express all values in the same terms for comparison purposes. For example, some values are readily translated into monetary terms while others are not. In order to meet this challenge, we are recommending consensus-building negotiation supported by multiple accounts analysis as a way of attempting to accommodate measurable and non-measurable values.

5.2.1 *Old Growth Values to Consider*

note: A more extensive discussion of old growth values is provided in the Values Team Report of the Old Growth Strategy Background Papers.

- **Biodiversity**
  Biodiversity refers to the variety of life in an area, which could be as small as a decaying log or as large as the biosphere. Old growth forests represent a portion of the possible biodiversity found in a landscape.

- **Community recreation**
  Old growth forests can have a significant value for community recreation activity, such as short walks, wildlife viewing, fishing, picnics and general relaxation and inspiration.

- **Community stability**
  Community stability is an essential component of sustainable development. It can be defined in a number of ways. One approach assumes that the maintenance of employment in the basic economic sector is a necessary prerequisite to community stability. Another assumes that economic growth defines stability. A third approach assumes that change is a given, and therefore community stability should be based on the ability of a community to adapt and evolve over time.

- **Gathering**
  Most of the items gathered are plant products such as mushrooms, berries, roots, seeds and leaves. These are used for culinary, decorative or medicinal purposes, often as part of a traditional forest-based lifestyle.

- **Geoclimatic**
  Old growth forest ecosystems are significant carbon reserves and play an important role in the global geochemical cycle. The growth and existence of the old growth forests of British Columbia are the result of a complex interaction of flora, fauna, micro-organisms and the physical environment (soils, water, physiography and climate).

- **Grazing**
  The well-established pattern of cattle and sheep grazing on open range and within the forest is a major part of these industries in the Interior.

- **Heritage**
  Traditionally, "heritage" values have referred to historical events and the developed environment, including historical sites and buildings. However, there is growing interest in "natural heritage," which includes any aspect of the natural environment that has cultural significance.

- **Hunting, trapping and fishing**
  Hunting, trapping and fishing within old growth forests consist of commercial harvesting activities, guide-outfitting, recreational pursuits, and personal sustenance activities.

- **Option, bequest and existence**
  Option value refers to the public desire to preserve its options for the future. Bequest value is similar in that it reflects the value of knowing that old growth forests will be available to future generations. It differs from the option value in that the option value may be for future use by current generations – the use decision is merely postponed. Existence value refers to the public desire to preserve old growth values for their own sake, with no use intended now or in the future.

- **Science and education**
  Increasing recognition is being given to the importance of both pure and applied research into biophysical processes, ecological structure, biodiversity and successional patterns in old growth forest ecosystems. Old growth ecosystems also have many unique characteristics (such as age, tree size and ecological complexity) that lend themselves to general educational and interpretive programs for a wide range of audiences, from tourists and the general public to students at all levels.

- **Spiritual and aesthetic**
  Spiritual values include religious, inspirational, cultural and aesthetic values, as well as the general well-being experienced by many people in old growth forests. The aesthetic values of old growth consist of those positive visual, tactile and auditory aesthetic experiences that can be derived only from old growth forests.

- **Symbolic**
  Wildlands represent an opportunity for people to experience nature with relative non-interference by others (including even a lack of evidence of other humans), and to experience the relative non-interference of nature by humanity. This value of wildlands is also important symbolically, even for those who do not visit a particular wild area.

- **Timber and manufactured forest products**
  The forest products industry in British Columbia relies almost entirely on old growth forests to provide raw materials. Hundreds of different wood products are manufactured to various stages of finish within the province. Since society values employment and public goods and services, harvesting old growth timber and manufacturing forest products is also of value to society, providing jobs, public revenues, and necessary products.

- **Tourism**
  Many of the physical and biological attributes of old growth forests are tourism attractions, or play a significant role as scenic backgrounds for many tourism activities.

- **Water**
  The old growth forest has different roles within the water cycle: it recycles ground water back into the atmosphere through transpiration processes; it provides a filter for precipitation; and it acts as a stabilizing force to reduce soil erosion.

- **Wilderness**
  The Wilderness Advisory Committee defined wilderness as "an expanse of land preferably greater than 5,000 hectares retaining its natural character, affected mainly by the forces of nature with the imprint of modern man [sic] substantially unnoticeable." Experiencing or protecting old growth for its wilderness values is important to many people.

The full range of old growth values can likely be incorporated into management decisions through the direct participation of all interests in decision-making. As a general goal, old growth management decisions and planning should reflect consensus agreements among all affected parties, set within a broad societal commitment to the sustainable management of resources. The geographic scale of these agreements should reflect provincial level goals and guidelines, through regional targets and landscape plans, and site-specific management plans.

5.2.2 *THE CONSENSUS-BUILDING NEGOTIATIONS APPROACH*

Consensus-building negotiation is a structured, deliberate attempt by the parties involved to seek an outcome that accommodates rather than compromises their individual interests. It requires that the parties abandon their entrenched bargaining positions in favour of their underlying interests; work together to design options for mutual gain; reach an agreement that they can live with; and jointly implement and monitor the outcome. "Consensus-building" negotiation differs from conventional negotiation in that the focus is on creating solutions in all the parties' interests, rather than on extracting compromises to reach a state of mutual dissatisfaction. An independent facilitator is normally used to open and maintain communication channels, to help separate interests from positions, to identify areas of agreement, and to assist in establishing mutualiy agreeable procedures.

For these negotiations to be implemented:

1. all parties in the negotiations must be willing to make a fundamental commitment to the process;
2. a neutral administrative structure for old growth decision-making is required to facilitate negotiations; and
3. the parties must have a strong incentive to negotiate. While many factors affect the willingness of an individual or organization to negotiate, one of the most significant is the status of the results of the negotiations.

The process could be effectively integrated at all levels of old growth management if parallel and increasingly specific objectives were adopted at each level. For example, at the provincial level, explicit goals and guidelines of provincial significance could be addressed. At the regional level, the provincial goals and guidelines could be used to establish operational targets and landscape plans that reflect the type and distribution of old growth values in the region. At the local level, the provincial and regional goals and targets can be tailored to meet the specific needs of the local communities and site-specific conditions.

Incorporating all interests into each level of decision-making is essential. We recommend that a consensus-building negotiations approach be established at each level to encourage participation. The matrix in **Figure 2** indicates the level at which different types of decisions can be effectively implemented. The arrows indicate the need for the participation of all levels of interest in each type of decision.

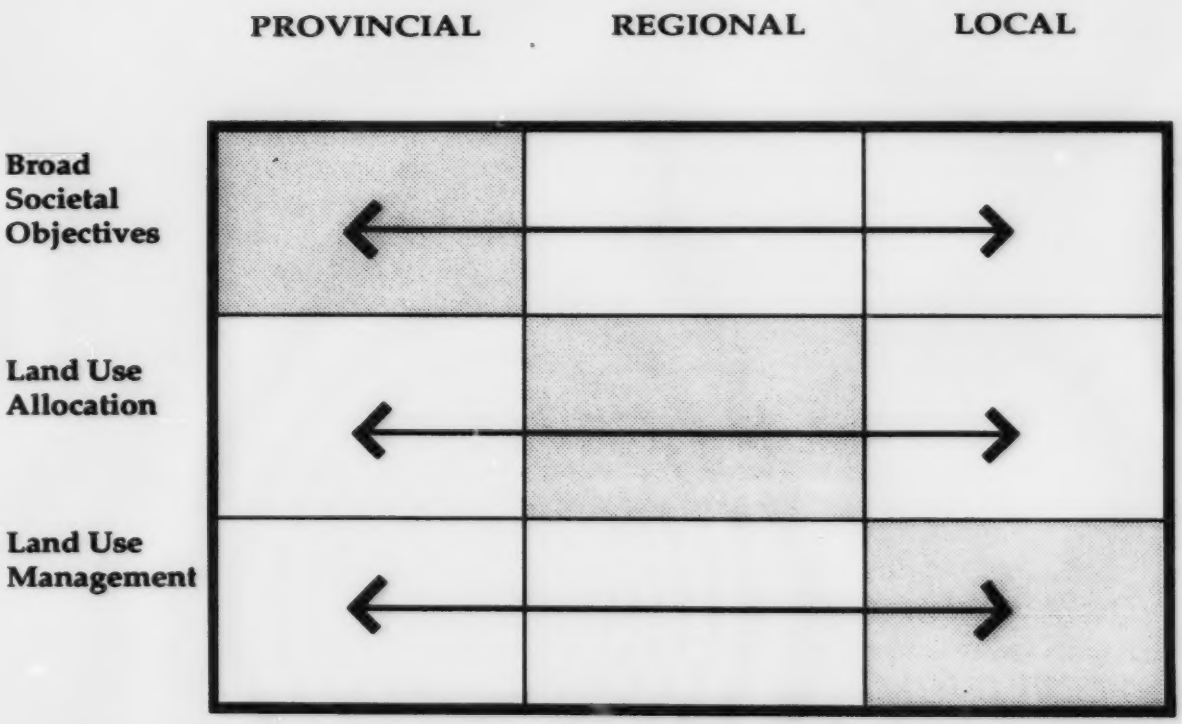


FIGURE 2:
Levels of Decision-Making for Implementing the Strategy

Stakeholder involvement

A key challenge facing the implementation of a consensus process is the selection and accountability of process participants. It is essential that process participants:

- are widely supported within their constituency,
- are empowered to make decisions on behalf of their constituency, and
- have put forward a communication strategy designed to keep their constituency well informed about decisions within the process.

Note: This section is presented in a shaded box as an issue related to the consensus model on p. 12.

5.2.3 *MULTIPLE ACCOUNTS ANALYSIS*

*Note: More detailed information on Multiple Accounts Analysis is available in Marvin Shaffer and Associates Ltd. 1991, **Socio-Economic evaluation of old growth conservation strategies** , (see **Table 3** and Bibliography; and in the Old Growth Strategy Background Papers.*

A logical method for analyzing alternative old growth objectives is needed to support consensus-building negotiations.

One method of analyzing the ecological, social and economic values of old growth is "multiple accounts analysis." Techniques for measuring these types of values are discussed in the Old Growth Strategy Background Papers.

Multiple accounts analysis is used to evaluate management alternatives by comparing the impacts of different objectives on several social and economic features or "accounts." Both measurable and non-measurable benefits and costs are accounted for separately, rather than being combined in a single measure (**Table 3**).

Participants in consensus-building negotiations must select the accounts to be used, and must support the assumptions and data used for the analysis.

Table 3: Sample Multiple Accounts Framework. [Source: Marvin Shaffer and Associates Ltd. 1991. Socio-economic evaluation of old growth conservation strategies.]

Economic Benefits	Net value of commercial and non-commercial output of alternative options
Environmental Values	Environmental attributes not amenable to quantification in net benefit account
Employment	Direct employment generated
Government Financial Impacts	Government resource-related rents and other revenues, less direct expenditures
Regional Impacts	Income and employment generated in all sectors, by sector and quality of job (i.e. multiplier effects)
Community Stability	Changes in employment opportunities, population, social services, etc.
Native Community Impacts	Resource use, cultural impacts, employment opportunities, etc.

5.3 RECOMMENDATIONS

Short-Term

We recommend that:

- a **"Guide to building consensus"** and a **"Guide to multiple accounts analysis"** be prepared for the IMC and distributed to everyone involved in old growth planning processes.

- existing and proposed forest planning processes use consensus-building negotiation amongst agencies and interested parties, according to the guidelines developed by the IMC.

- forest planning processes and documents be required to recognize and account for the full spectrum of old growth values.

- the following principles be presented by the IMC to those involved in existing planning processes as a basis for building consensus amongst participants:
  - All old growth values are legitimate and should be respected.
  - All interests have the right to be represented in old growth decision-making processes and they should be treated with respect within these processes.
  - Participants in the consensus-building process should be committed to it and should avoid initiatives that could affect the outcome of the negotiations from outside the process.
  - Future land use allocation options should be maintained while impacts on dependent communities are minimized.

Long-Term

We recommend that:

- various land management and allocation strategies be integrated into a comprehensive land use strategy for British Columbia (see Section 8.3.2).

- the land use strategy integrate provincial, regional and local interests by establishing an open process that defines goals and objectives at the provincial scale, land use allocations at the regional scale, and resource management strategies at the local scale (**Figure 2**).

- old growth allocation and management decisions be based on consensus among all interests, achieved through mediated planning and principled negotiation.

- information and analysis that is used in consensus building be developed to meet the needs of the parties involved in the process and presented with all assumptions defined.

- to facilitate the achievement of these objectives, we suggest the creation first of a neutral agency to manage and facilitate negotiations aimed at implementing a comprehensive and integrated land use strategy at provincial, regional and local scales; and second, of a legislative foundation (see Section 8.3.1) that:
  - articulates a broad societal commitment to environmental, economic and social sustainability;
  - reinforces the consensus-building negotiations process by delegating decision-making powers through the neutral agency to the participants;
  - co-ordinates all land use decision-making within a land use strategy; and
  - provides opportunities for appeal, based on principles of administrative fairness and environmental, economic and social sustainability.

6. IMPROVING THE OLD GROWTH INVENTORY

6.1 FOCUS

A program of research and inventory must be established to identify the extent and distribution of old growth in all ecological zones of British Columbia. This will include an old growth inventory of existing reserves.

6.2 RATIONALE

Inventories for all old growth forest resources, including fish, wildlife, range and recreation, need to be improved and integrated. Provincial government initiatives are currently studying what additional information is required for provincial inventories, and what sampling methodologies are appropriate for gathering that information. The first step in this ongoing process is to establish an inventory of old growth forests.

Forest land inventories describe the location, characteristics, condition and extent of the forest, classified into homogeneous areas according to a set of well-defined criteria. Old growth definitions, as described previously (Section 4), allow the translation of these inventory data into specific estimates and locations of old growth forests.

Establishing a comprehensive old growth inventory is the cornerstone of a successful old growth management strategy. From this inventory, we will be able to determine the extent, status of protection, and rarity of old growth forest types.

The areal extent and location of different forest types and stages (such as old growth) may be assessed visually from sources such as aerial photographs and satellite images, or derived from existing data bases such as the provincial forest inventory. The quality and quantity of this inventory in British Columbia vary by ownership and administration.

6.2.1 *IDENTIFYING THE EXTENT AND DISTRIBUTION OF OLD GROWTH*

To support the Old Growth Strategy, a number of projects are presently underway to identify and compile information on provincial old growth forests. Two separate projects have been undertaken by the Ministry of Forests, Inventory Branch and by the Sierra Club/Wilderness Society. These projects have interpreted satellite imagery of Vancouver Island into classes such as "mature forest", "immature forest", or "subalpine forest." Similar interpretations of

satellite imagery have been undertaken for the Queen Charlotte Islands by the Ministry of Forests, Inventory Branch and for the rest of coastal B.C. by several provincial government agencies. The information for Vancouver Island has been analyzed by ecological categories such as biogeoclimatic zones and ecoregions, as well as by administrative designation (Eng 1992). Similar analyses are also planned for the rest of the coastal interpreted imagery.

Existing forest cover information has been analyzed for a number of areas in the province to determine the distribution and abundance of forests exceeding 140 years of age. These "old forests" (technically referred to as age class 8 and 9) will be ground-checked to determine whether they contain the attributes commonly associated with "old growth forests."

Forest cover maps from the 1956 - 1958 provincial inventory are being updated for the 15 largest and oldest provincial parks, because there is currently no inventory information available for these areas. The 1956 - 1958 information is being digitized, revised to a 1: 20,000 scale to make it compatible with current forest cover data, and updated using 1: 60,000 photographs and satellite imagery.

6.2.2 *Limitations of the Existing Forest Inventories in British Columbia*

From a provincial perspective, the forest inventories currently available are inadequate for several reasons:

- The province does not have a single, integrated forest cover data base for all the provincial, federal and private lands and their respective administration classes. **(Figure 3).**

- Comprehensive, digitized biogeoclimatic unit maps at the provincial (1:2,000,000), and regional (1:250,000) scales, are needed (this project is nearing completion). Digital ecoregion maps (1:500,000) are also required.

- The forest cover inventory data base may not include sufficient data on forest attributes to differentiate old growth forest. For most forests these include information on canopy structure and the presence of snags or large woody debris. Much of the age data are only estimates with unknown reliability. Consequently, inventories can only provide an estimate of potential old growth.

- Lack of an integrated data base limits the extent to which we can measure the degree of continuity of remaining old growth. Contiguous blocks, rather than fragmentation into scattered patches, is an important attribute, with implications for forest and wildlife management and maintenance of biological diversity.

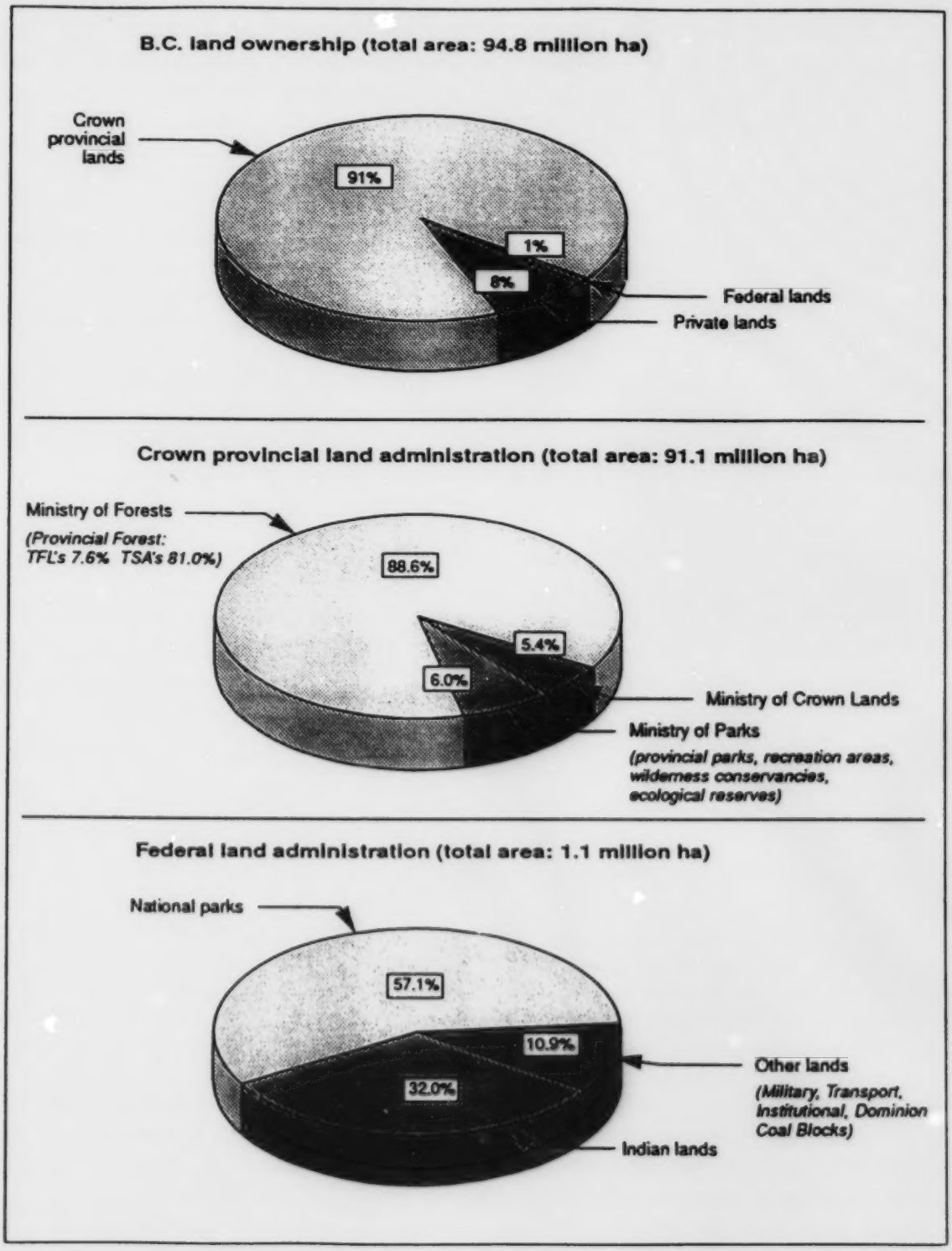


Figure 3: Ownership and Administration of British Columbia's Land Base.

- In the oldest and largest provincial parks, forest cover summary data are inadequate for mapping or estimating the areal extent of old growth. For those parks created after the date of original inventory, the park boundaries may not be in the data base. Park inventories have not been updated since the original survey, to reflect changes due to wildfire, windthrow, insect infestations and disease. Essential for the evaluation and completion of an old growth reserve system are the acquisition of missing data and the production of an integrated summary of old growth in national and provincial parks, B.C. Forest Service wilderness areas, ecological reserves, deferred ungulate winter ranges and management corridors, and other areas under protected status.

- Current forest inventory data on most private lands (4.4 million ha) and on provincial Crown lands outside provincial forests (5.7 million ha) are lacking or are confidential.

6.3 RECOMMENDATIONS

We recommend the following actions:

- Complete a single integrated forest cover data base for British Columbia that is up-to-date and digitized.
  - Supply TFL data to the Ministry of Forests (year one).
  - Obtain inventory data for provincial and federal parks, and other public lands (year three).
  - Obtain forest cover data for private lands with significant amounts of older mature forest (year two).
  - Complete an integrated data base (year three).

- Map the older forests of British Columbia using the forest cover data base, supplemented by remote sensing data.
  - Complete maps (1:250,000) based on existing data (year one).
  - Finalize maps based on improved data base (year three).

- Summarize and evaluate old growth in existing reserves to identify representation of typical, rare, and rapidly decreasing old growth types. Produce:
  - interim report to identify gaps based on existing knowledge (year one);
  - final report based on improved data base (year three).

- Expand and refine the inventory data base to include: old growth attributes that reflect the spectrum of old growth values, e.g., old growth dependent wildlife; and more dependable age class data.
  - Develop interim guidelines for inventory data collection (year one).
  - Conduct a pilot project to test and refine inventory guidelines (year two).
  - Incorporate old growth attributes into inventory procedures (year three).
  - Complete re-inventory (in 2000 and after).

- Complete digitizing of biogeoclimatic and ecoregion map units.
  - Complete 1:2,000,000 biogeoclimatic digitizing (year one).
  - Complete 1:500,000 ecoregion digitizing (year one).
  - Complete regional 1:250,000 biogeoclimatic digitizing (year one).

- Evaluate the status, and the degree and nature of dependence, of organisms that are closely associated with or dependent on old growth forests in British Columbia (see **Table 2**). Produce:
  - interim report (year one);
  - status report (year two).

7. DEVELOPING A FRAMEWORK FOR OLD GROWTH CONSERVATION

PART 1 OVERALL FRAMEWORK FOR OLD GROWTH RESERVES

7.1 FOCUS

An old growth conservation framework is needed to describe the overall plan of organizational structure, as well as the research, inventory, planning, and management activities, recommended for conserving old growth values.

The goal of such a framework is to ensure that the full spectrum of old growth values is sustained for the benefit of future generations. To this end, the framework adopts two complementary approaches to old growth conservation:

- **Reserves, in which the approach is to reserve provincially representative old growth forest ecosystems in their natural state, in sufficient distribution and size to ensure that their ecological integrity is sustained and that they are capable of meeting a wide range of values.**

- **Management practices, in which the approach is to ensure that commodity uses of old growth forests, including timber, range, wildlife, and recreation, are managed to sustain the productivity and integrity of the ecosystems on which those commodity uses — and resource-based communities — depend.**

7.2 RATIONALE

To implement these two approaches within the context of integrated resource management, the conservation framework sets, along a continuum, three broad management objectives: **reserves, special management, and commodity emphasis (Figure 4).**

Conceptual Old-Growth Integrated Resource Management Mosaic*

	Reserve ◄——► ***Special Management***		◄► ***Commodity Emphasis***
Management Objective is:	old-growth attributes conserved for this site	specific old-growth attributes sustained for this site	sustainable commodity use that takes into account old-growth attributes essential for maintenance of ecosystem productivity
Land Use Strategy is:	to designate reserve areas to ensure protection	to invoke special management related to desired attribute retention	to emphasize commodity resource values
Administrative Units Include:	park, ecoreserve, wilderness, or other land area reserves	TSA, TFL forest licences, community watersheds, wildlife management areas, woodlots, or other designations related to resource tenures such as guiding or trapping areas	

* *In a process of integrated resource planning this would allow old growth values to be weighed against other resource values to achieve a landscape allocation pattern.*

Figure 4: Conceptual Old Growth Integrated Resource Management Mosaic

- *The objective of **reserves** is to maintain viable old growth forest ecosystems in their natural state, well distributed over their range in size and distribution, to ensure their ecological integrity both within the individual reserves and within the network or system of reserves throughout a regional landscape. Factors to consider include minimum size criteria, connectivity, redundancy, and recruitment.*

  The old growth forests of British Columbia provide a repository for, amongst others, biological/ecological, spiritual/heritage and recreation/tourism values. With civilization's growing demands on these forests, it is imperative that a sufficient amount of old growth be identified, kept intact and, as much as possible, isolated from human interference. The long-term viability of the biological diversity of these ecosystems will require that more than small isolated examples of old growth forest ecosystems be set aside.

- *The objective of **special management** is to maintain old growth attributes within forests that are managed with a special emphasis on old growth dependent resources.*

  Special management requires the identification and subsequent conservation of specific old growth attributes found within the ecosystem being managed. Maintaining these attributes does not necessarily require a total absence of commodity use or other economic activity, but it does require management that protects and sustains specific old growth ecosystem attributes. Issues to consider include commodity values, riparian habitat, spiritual values, wildlife winter range and movement corridors, recreational activity, and other visually and ecologically sensitive areas.

- *The objective of **commodity emphasis** is to maintain forest stands for commodity use while retaining, enhancing or creating ecological attributes essential to sustaining the natural productivity of the land base. Areas managed in this way should be able to support specific old growth attributes which are necessary to ensure that reserves and special management areas do not exist in biological isolation.*

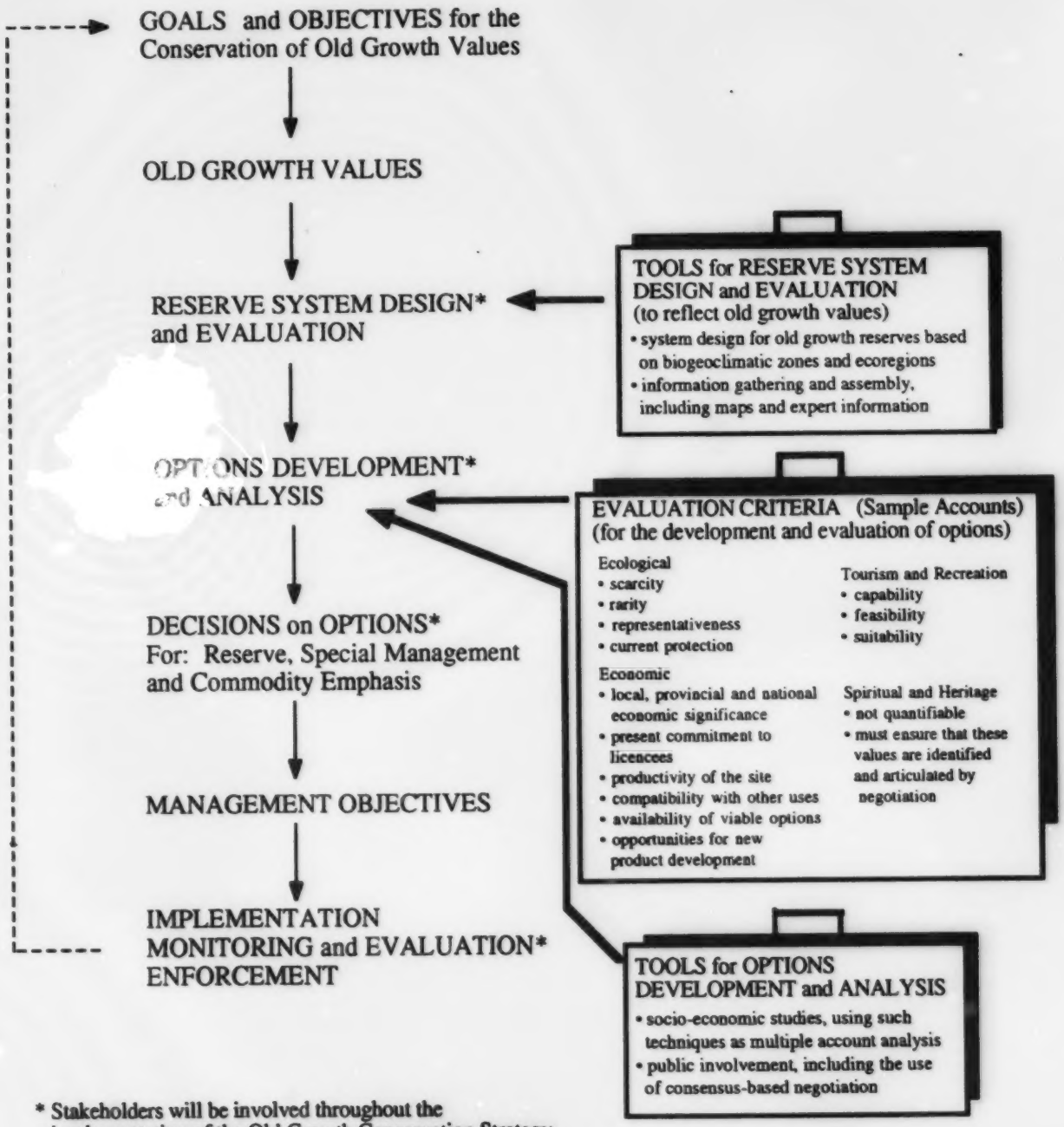
  Through integrated resource management practice, a commodity emphasis takes into account old growth attributes and other values within a managed forest setting. The commodity emphasis objective includes intensive forest management.

7.3 RECOMMENDATIONS

Because of the current limitations in the available old growth knowledge and inventory, developing a framework for old growth conservation will be an evolutionary process. Nevertheless, the work must begin now.

To equip resource practitioners and other participants at all levels so they can begin work immediately while developing the final framework, we recommend a "tool-kit" approach. In essence, this tool-kit will provide the information, guidelines, analytical tools, and procedures that users need for generating a comprehensive old growth conservation framework (Fig.5.)

The essential parts of the tool-kit are described below. Many of these "tools," to be implemented, require immediate priority for research and development. We recommend that a cross-sectoral, multi-disciplinary task force be assigned to co-ordinate these efforts and direct research and inventory funds to them. This "Specialist Task Force" should be part of the Provincial Old Growth Working Group (Section 8). In this way, the tool-kit will continue to be refined under the direction of the task force, with input from participating resource professionals.


GOALS and OBJECTIVES for the Conservation of Old Growth Values
OLD GROWTH VALUES
RESERVE SYSTEM DESIGN* and EVALUATION
OPTIONS DEVELOPMENT* and ANALYSIS
DECISIONS on OPTIONS*
For: Reserve, Special Management and Commodity Emphasis
MANAGEMENT OBJECTIVES
IMPLEMENTATION
MONITORING and EVALUATION*
ENFORCEMENT
TOOLS for RESERVE SYSTEM DESIGN and EVALUATION
(to reflect old growth values)
• system design for old growth reserves based on biogeoclimatic zones and ecoregions
• information gathering and assembly, including maps and expert information
EVALUATION CRITERIA (Sample Accounts)
(for the development and evaluation of options)
Ecological
• scarcity
• rarity
• representativeness
• current protection
Tourism and Recreation
• capability
• feasibility
• suitability
Economic
• local, provincial and national economic significance
• present commitment to licencees
• productivity of the site
• compatibility with other uses
• availability of viable options
• opportunities for new product development
Spiritual and Heritage
• not quantifiable
• must ensure that these values are identified and articulated by negotiation
TOOLS for OPTIONS DEVELOPMENT and ANALYSIS
• socio-economic studies, using such techniques as multiple account analysis
• public involvement, including the use of consensus-based negotiation

* Stakeholders will be involved throughout the implementation of the Old Growth Conservation Strategy, as indicated by the Old Growth Management: Organizational Structure (Figure 7) and described in Chapter 5, Incorporating Old Growth Values. This is consistent with the development of the Strategy.

Figure 5: Model of the Old Growth Conservation Framework

7.3.1 *The Essential Components of the "Tool-Kit"*

- **RESERVE SYSTEM DESIGN AND EVALUATION**

System design
One of the first priorities for the conservation framework is to identify areas of old growth for potential reservation. The work outlined below should occur at the provincial level, with information applied from the regional level to identify target areas.

No separate designation entitled "old growth reserves" is needed. Old growth values will be reserved under the existing designations of parks, ecological reserves, wilderness areas, and wildlife management areas. It is important, therefore, that current plans for the provincial parks system, the ecological reserve system, the wilderness areas system and the wildlife management areas system be fully integrated and take account of the old growth conservation framework.

A key step in completing a system of reserves for old growth is to design the system set, or blueprint – that is, the breakdown of the province against which the completeness and representation of the reserve system can be judged. This "system design" will be based on the biogeoclimatic and ecoregion classification systems and must be compatible with the system designs for provincial parks and ecological reserves.

We recommend that, within the next 3 years, government complete and begin implementing fully integrated system plans for protected areas which take full account of old growth values. These plans will provide direction on provincial and regional objectives, as well as information on key target areas for detailed local study of land use options. **This should include but not be limited to the completion of the Ecological Reserve System Plan.**

Information gathering for ecological values
This part of the tool-kit should provide the critical information associated with scarcity, rarity, representativeness and rate of utilization of old growth forests which is currently lacking for the decision-making process.

The immediate priorities are:

- development of a ranked list of scarce ecosystems and rare and threatened old growth associated species and their habitats, for the entire province;
  Start in year 1 at the provincial level.

- identification of which features noted above are currently protected and those which are not;
  Start in year 1 at the provincial level.

- identification of specific old growth forests that might best represent those unprotected features noted above.
  Start in year 1 at the regional level.

In other system plans, such as parks, ecological reserves, and wilderness areas, the process outlined by these three priorities has been coined **"gap analysis."**

• OPTIONS DEVELOPMENT AND ANALYSIS

Options development and analysis is to occur at the regional level, using local level information to identify options for specific reserve designations.

Evaluation criteria for the development and evaluation of options
Areas of old growth identified by the "gap analysis" outlined above will be assessed so that reserve options can be generated. This part of the tool-kit outlines the criteria or "accounts" (see Section 5.2.3) by which the broad range of values represented by old growth forests can be assessed. These criteria will form the standards used to select forests for potential reserve designation.

We recommend that the initial criteria to be applied be based on those established by the Conservation of Areas Subcommittee for screening the short-term deferrals.[2] These criteria or accounts are based on all old growth values and have been organized for ease of discussion into four key sets of values: biological/ecological, recreational/ tourism, commodity, and spiritual/heritage.

- The criteria and methodology are to be refined by the Specialist Task Force in year 1, for application at the regional level at the earliest possible date.
  Start in year 1 at the provincial level.

Tools for options development and analysis
This part of the tool-kit will apply the recommendations outlined in Section 5 to the decision-making process. In particular, guidelines and procedures must be developed for the following:

- socio-economic studies, which use such techniques as multiple accounts analysis; and
- public involvement, including the use of consensus-building negotiation.

[2] See Conservation of Areas Team Report, in Old Growth Strategy Background Papers.

Analysis should include the identification of the social and economic sensitivities in communities that are dependent on old growth. Priority would be given to those communities potentially most affected by changes in harvesting patterns. As well, alternatives for helping communities adjust to changed harvesting practices and potential reserve designations should be examined.

- the analysis is to be refined by the Specialist Task Force in year 1, for application at the regional level at the earliest possible date.
  Start in year 1 at the provincial level.

7.3.2 *Deferral Review*

Apart from development of the conservation framework, immediate priority must be given to addressing those areas under short-term deferral — by August 1, 1992. Such review should use an approach that integrates local planning and decision-making processes. This task is the responsibility of the Commission on Resources and Environment, the Protected Areas Committee, and the Specialist Task Force of the Provincial Old Growth Working Group.

Experience gained through the resolution of the short-term deferrals will be valuable in refining the tool-kit as a whole.

7.3.3 *Proposed Implementation Steps*

The steps for implementing the reserve component of the conservation framework are outlined in Section 10, where they are integrated with the recommendations from other chapters of the report. For a more detailed description of the ecological research priorities relevant to the old growth conservation framework, see Sections 4.3 and 6.3.

PART 2 CONSERVING OLD GROWTH ATTRIBUTES THROUGH FOREST MANAGEMENT PRACTICES

7.4 FOCUS

While the first priority of the old growth conservation framework is to identify potential reserve candidates, a similar decision-making process can also be used to address more specific stand and landscape-level issues which affect management practices – issues that come under special management and commodity emphasis.

Note: More in-depth discussions of these management practices are available in the Management Practices Team Report, ***Old Growth Strategy Background Papers,*** *and in Zielke, K.,* ***Management Practices Brief.*** *(see bibliography).*

7.5 RATIONALE

Within ecologically-determined units at the district level objectives and guidelines for old growth will be set, along with objectives and guidelines for other resource values. Planning priorities will be developed for areas within these units to be compatible with all objectives and guidelines, thereby ensuring that old growth values and other resources values can be maintained and possibly enhanced over the long term,

Management activities to maintain or promote old growth structural attributes will be used where appropriate to meet old growth objectives and priorities. When combined with reserves, the result will be a landscape allocation pattern that will function to satisfy old growth and other resource values.

7.5.1 *Managing for old growth structural attributes*

Management practices are to be site-specific, and incorporated into Pre-Harvest Silvicultural Prescriptions (PHSP's). This way they will reflect the objectives for old growth structural attributes set in management working plans, development plans and other formal planning documents required for the licensed use of forest resources.

Some of the most common structural attributes which reflect a broad range of values in most old growth forest types include:

- a diversity of tree species,
- presence of a variable snag component,
- presence of some large trees,
- significant amounts of coarse woody debris.

Where management for old growth structural objectives is indicated, practices should be modified to maintain or enhance such structural attributes.

7.6 RECOMMENDATIONS

7.6.1 *Developing a Landscape-Level Planning Process*

Managing for old growth attributes requires that such attributes be identified and ranked within each forest type in every forest region. Objectives, to reflect old growth values, must be set for selected structural attributes at the stand level to guide management practices for maintaining or creating these attributes. In turn, objectives must also be set at the landscape level to reflect the desired extent and relative distribution of these structural attributes. The decision-making process for selecting the appropriate mix of management objectives will be similar to that outlined in Section 7.3.1, and illustrated in **Figure 5**.

The "**stand level**" has been defined as the level at which a relatively homogeneous land unit can be managed under a single prescription or set of treatments to meet well-defined objectives. Stand level practices vary with forest type, but all must be designed to ensure consistent conservation as well as creation of important old growth structural attributes over time. These practices must also be compatible with the other management objectives set for a particular stand, in addition to being cost effective and consistent with safety regulations.

The "**landscape level**" encompasses many stand-level units. We recommend that the boundaries of these landscape units be ecologically determined within management units (TFL's or TSA's), and that they form the basis for landscape-level planning. Targets for old growth management should be set within each landscape unit and be co-ordinated with objectives for other resource values within that unit (See **Figure 6**).

Much is still unknown about the effects which specific management practices have on the functions and values of old growth forests. A provincial strategy for incorporating old growth values in management practices must recognize the different regions and forest types of British Columbia. It must also recognize management cost implications. We recommend that each region of the province proceed with research, development, testing, and costing of management practices at the stand and landscape levels. A flexible, adaptive management philosophy is needed to ensure that new information from both research and operational projects is incorporated, as it becomes available.

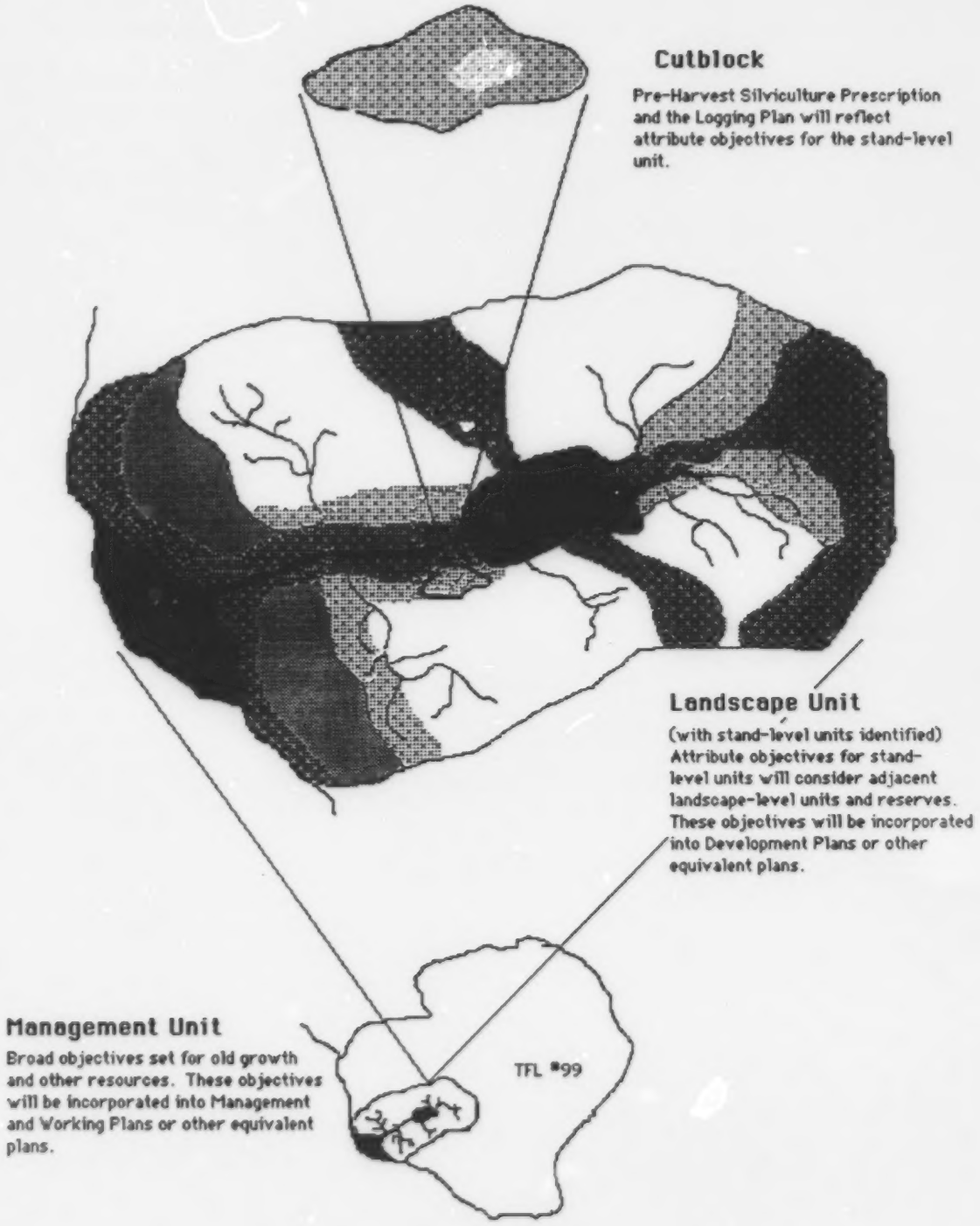

Cutblock
Pre-Harvest Silviculture Prescription and the Logging Plan will reflect attribute objectives for the stand-level unit.
Landscape Unit
(with stand-level units identified) Attribute objectives for stand-level units will consider adjacent landscape-level units and reserves. These objectives will be incorporated into Development Plans or other equivalent plans.
Management Unit
Broad objectives set for old growth and other resources. These objectives will be incorporated into Management and Working Plans or other equivalent plans.
TFL #99

Figure 6: The Landscape-Level Planning Concept

7.6.2 *Principles of Landscape -Level Planning*

We recommend the assembly of regional and local Old Growth Working Groups to design and implement landscape-level planning according to the following principles:

- Planning will occur within landscape units, which have ecologically defined boundaries (e.g., a watershed, a plateau, a portion of a plateau dissected by a major topographic barrier). Boundaries may have to be adjusted to account for logical administrative divisions, but the ecological impact of such an adjustment must be considered.

- A landscape-level plan will be prepared for each landscape.

- Every management unit (TSA, TFL or equivalent) will be divided into defined landscape units.

- Landscape-level planning will first require the identification and quantification of distinct stand-level units within designated landscape units. These stand-level units may be classified as a patch, corridor, matrix or other landscape-level planning designation.

- Desired proportions of each stand-level unit and their spatial arrangement over time will be determined, thus creating a mosaic within the landscape.

- Old growth values will be integrated with other resource values. Here, several options and the impact of each option on all resource values may have to be considered. Adjustments to the desired spatial or temporal arrangement of stand-level units may occur (See **Figure 5**).

- Targets for old growth structural attributes will be set to reflect management objectives within the landscape unit.

- An Allowable Annual Cut could be set for each landscape unit considering, among other factors, the landscape-level targets set for old growth and other resource values. The combined AAC's of the landscape units would then set the AAC for the encompassing management unit.

- Landscape-level planning will be incorporated into the current forest planning process.

7.6.3 *Implementation Steps Identified for Landscape-Level Planning*

Determination of Values

- Identify all old growth types and associated structural attributes within each region.
  Start in year 1 at the regional level.

- Rank structural attributes for each old growth type for their ability to meet broad regional objectives for old growth. Consider costs as well as benefits at this stage.
  Start in year 1 at the regional level.

Implementation of Management Practices at the Landscape Level

- Develop guidelines for landscape-level planning.
  Start in year 1 at the regional level.

- Determine values and objectives for old growth (consistent with regional objectives) within each forest district.
  Start in year 1 at the district or sub-district level.

- Implement the landscape-level planning process and guidelines developed at the regional level.
  Start in year 2 at the district and sub-district level.

Implementation of Management Practices at the Stand Level within a Landscape Unit

- Design prescriptions to attain old growth objectives set for old growth structural attributes within stand units during landscape planning. Existing Pre-Harvest Silviculture Prescription procedures will help ensure successful integration with other resource objectives at the stand level.
  Start testing in year 1 at the local level.
  Fully implement when attributes and landscape-level guidelines are set.

- In the interim, where attributes have not been finalized, attention for old growth management at the stand and landscape levels should be directed at the following common attributes, when deemed appropriate for a given forest type:
  - a diversity of tree species
  - presence of a variable snag component
  - presence of large trees (relative to most mature trees) scattered throughout the stand
  - significant amounts of coarse woody debris

  Start in year 1 at the district and sub-district level.

7.6.4 *Other Recommendations*

- Green-tree retention should receive immediate attention for research and as a practice to manage for a range of old growth attributes.
  Start in year 1 at the regional, district and sub-district levels.

- The Wildlife Tree Committee should continue its work toward developing snag management practices, with expanded terms of reference to include present and future snag maintenance and creation.
  Start in year 1 at the provincial level.

- Practices for old growth management should be tested on a site- specific basis while they are being implemented operationally, using the concept of adaptive management.
  Start in year 1 at the regional, district and sub-district levels.

- The growth and yield implications of forest management practices for maintaining or creating old growth features should be investigated.
  Start in year 1 at the provincial and regional levels.

- The social and economic consequences of a potential reduction in AAC due to old growth management practices should be considered in the landscape-level planning process. As the conservation framework implies, some community involvement is recommended.
  Start in year 1 at the district and sub-district levels.

- The issue of who bears the additional costs associated with management to meet old growth objectives must be addressed. Provisions should be put in place where compensation is required.
  Start in year 1 at the provincial level.

- Work should be undertaken with all agencies to develop safe working guidelines and training programs to accompany recommended practices for old growth management.
  Start in year 1 at the provincial level.

- Present timber utilization standards must be re-examined on a site-specific, ecological basis, considering management for old growth objectives.
  Start in year 1 at the provincial level.

- Policies and procedures for planning, harvesting and silviculture activities must be re-examined for their ability to accommodate:
  - the use of the full spectrum of partial-cutting systems, including green-tree retention;
  - snag management in a safe and practical manner; and
  - increased use and acceptability of a deciduous component and greater variability in crop-tree spacing.

  Start in year 1 at the provincial level.

PART 3 SUPPORT REQUIREMENTS

7.7 EDUCATION AND TRAINING

Education and training should be an important element in a strategy to manage for old growth objectives. An understanding of the general objectives of old growth management is necessary for all those involved in resource management activities, as well as for the general public, before such a strategy is implemented.
Start in year 1 at the provincial level.

7.8 ADEQUATE FUNDING AND STAFF

For the old growth conservation strategy to be effectively implemented, the responsible provincial government agency will require a strong mandate, backed by adequate funding and staff. Ensuring that these requirements are brought forward to government is the responsibility of the Provincial Old Growth Working Group.
Start in year 1 at the provincial level.

8. IDENTIFYING ORGANIZATIONAL STRUCTURE AND PLANNING PROCESSES

8.1 FOCUS

A co-operative interagency structure for long-term management of old growth forests will be established. It will mesh with the broader land use strategy presently being proposed by the Forest Resources Commission and the Round Table on the Economy and the Environment. We recommend that provincial, regional and local land use bodies and associated Old Growth Working Groups deal with land and resource allocation issues.

While it is important that an overall land use strategy be eventually put into place, implementation of the Old Growth Strategy should begin immediately. The recommended structure therefore attempts to minimize the need for additional bureaucracy and maximize the use of existing expertise and integrated management systems at the provincial, regional and local levels.

To this end, we recommend that the following Ministries — Forests; Environment, Lands and Parks; Economic Development, Small Business and Trade; and Tourism — institute co-operative provincial, regional and local working groups to facilitate decision-making on old growth matters.

8. 2 RATIONALE

The organizational structure recommended for implementing the Old Growth Strategy provides for interagency and stakeholder working groups at provincial, regional, and local levels. These groups are seen as internal to land use planning bodies at their respective levels. In practice, the terms of reference of the Old Growth working groups could be integrated with other planning teams established for the purposes of integrated resource management, providing that they include the required balance of professionals and stakeholders.

8. 3 RECOMMENDATIONS

Figure 7 illustrates the recommended organizational structures and responsibilities for old growth management. The administrative bodies and their purposes are described below:

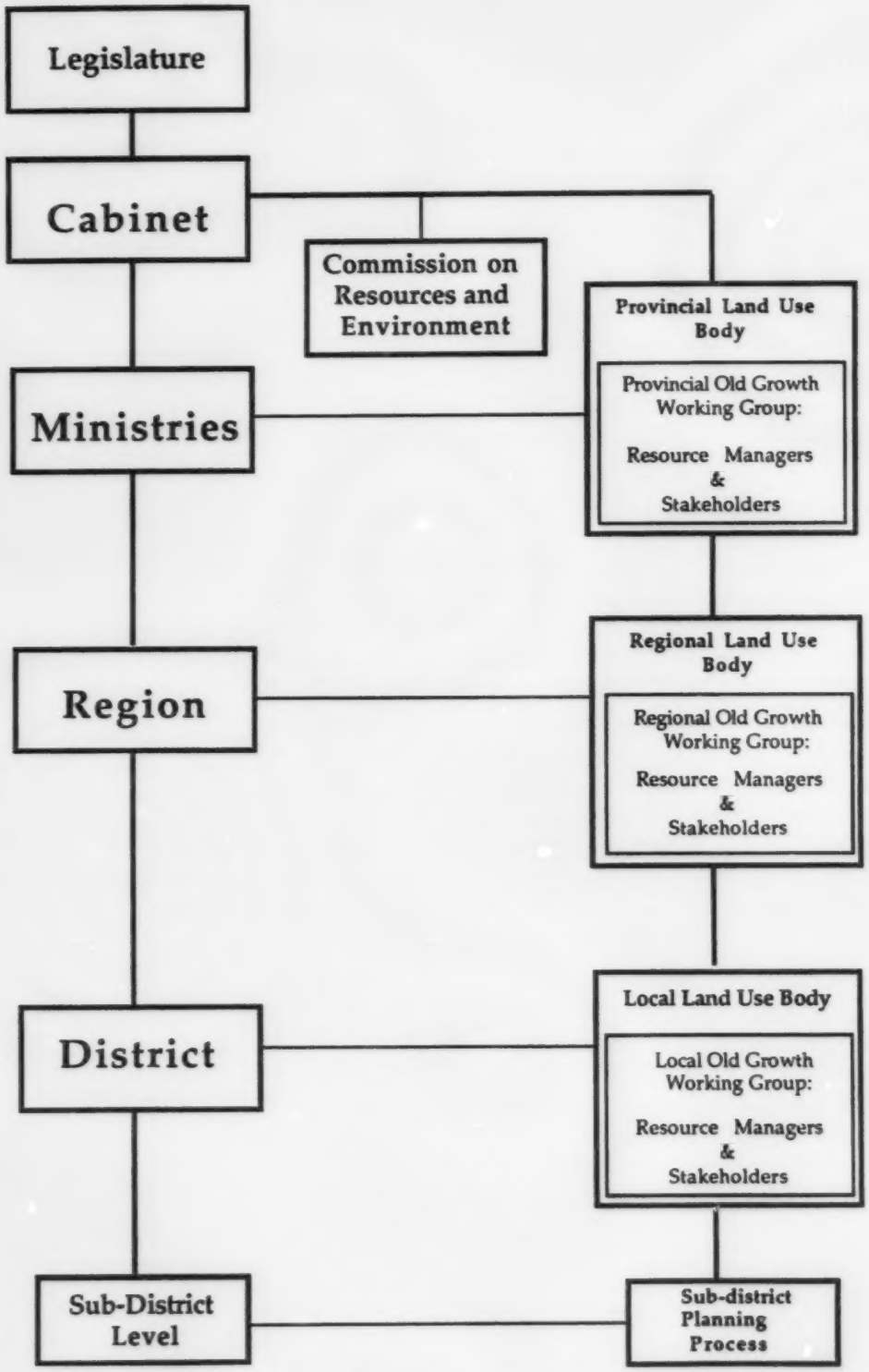


Figure 7: Old Growth Management: Organizational Structure

8. 3. 1 *New Legislation*

- Provides the mandate to enable Land Use Bodies at provincial and lower levels to decide on land use allocations in an accountable manner.
- Provides an appeal process for land use conflicts.

Recommendations:

- That new legislation be introduced to establish a Land Use Strategy, which makes provision for old growth forests that are economically, environmentally and socially sustainable.
- That amendments be made to existing resource agency Acts to specify land use mandates and responsibilities related to all values associated with old growth forests.

8.3.2 *Provincial Land Use Body*

This body would be empowered to make recommendations on land use allocation decisions and establish provincial land use criteria, by mandate through new legislation and subject to appeal. It is assumed that the Commission on Resources and Environment would oversee the implementation of a community-based land use participation process and a comprehensive dispute resolution system for the provincial, regional and local land use bodies.

Recommendations:
That the Provincial Land Use Body:

- comprise representatives from provincial ministries and stakeholder groups; and that membership would be according to selection criteria as outined in Section 5.2.2;
- develop broad provincial goals and objectives, and guidelines for making land use decisions within the resource agencies;
- integrate various land management and allocation strategies into a comprehensive land use strategy;
- facilitate conflict resolution and the resolution of impasse in the consensus process using principles of administrative fairness and environmental, economic and social sustainability, and operating through a defined process moving from lower to higher levels;
- direct and co-ordinate resource agencies to implement recommendations from all land use initiatives at a provincial level;
- co-ordinate the work of regional and local land use bodies;
- define the geographic area of regional and local land use bodies in consultation with representatives from those levels, based on socio-economic and ecological criteria.

Provincial Old Growth Working Group

This working group is a sub-committee of the Provincial Land Use Body. Members are recommended to be representatives from stakeholder groups and technical resource people from relevant ministries (see Section 10.1 for Terms of Reference of the Old Growth Working Groups.)

Recommendations:
That the Provincial Old Growth Working Group:

- establish provincial goals, objectives, policy, priorities, standardized criteria and guidelines for conservation of old growth forest, and ensure their compatibility with existing and evolving goals and objectives;
- co-ordinate and monitor Regional and Local Old Growth Working Groups;
- establish a working structure for a "Specialist Task Force" to support:
  - implementation of short-term research and inventory, both ecological and socio-economic;
  - development of a conservation framework and tool-kit components (see Section 7.3.1)
  - development, testing and implementation of management practices guidelines
  - development of appropriate processes to address immediate requirements for public involvement, and public information and education.
  - publication of a guide to the use of consensus and multiple accounts analysis in forest planning, and monitoring of its implementation and effectiveness
  - initiation of a process to rationalize of regional boundaries, to be carried forward in the proposed comprehensive land use strategy.
- identify and evaluate potential candidate areas for reservation, using evaluation criteria and values, supported by map-based information for relevant old growth values and a bibliographic base of research data on old growth;
- perform socio-economic impact assessments on a provincial scale using models and data identified as appropriate;
- facilitate conflict resolution arising out of Regional and District Old Growth Working Groups;
- communicate with line agencies and draw in expertise as required from ministry or external sources;
- provide technical support, facilitation, participation expenses for non-government organizations, resource centre services, and liaison with line agencies to meet research and inventory needs.

8.3.3 *Regional and Local Land Use Bodies*

The Old Growth Strategy recommends the establishment of land use bodies at the regional and local levels. The geographic area of these bodies may be redefined by the Provincial Land Use Body in consultation with regional and local representatives, based on socio-economic and ecological criteria.

The mandate of the regional and local levels will be similar. The regional focus will be to translate provincial conservation goals to meet specific economic and ecological needs. At the local level the focus will be specifically related to mangement issues. The regions will be responsible for ensuring linkage, consistency and co-ordination between the broad provincial goals and objectives for land use allocation between the three levels. Development of detailed terms of reference will be the mandate of CORE.

Regional and Local Old Growth Working Groups

To ensure accountable representation, we recommend that the appropriate land use body select members in consultation with stakeholders and resource agencies. We recommend that this be done in accordance with standardized guidelines to ensure a balanced membership of appropriate technical staff from resource agencies and interested stakeholder groups, as initiated in the interim process and as outlined in Section 5.2.2. It is emphasized that, wherever possible, existing and evolving structures and reporting mechanisms must be enhanced to accommodate integrated resource management for all values associated with old growth forests. At each level, a working group which may have members in common with the corresponding land use body, including public representatives, would carry out designated responsibilities. A successful old growth conservation strategy requires the integration of three objectives: forest reserves, special management, and commodity emphasis. This will require landscape-level planning to maximize total benefits between reserves and forest managed for other purposes.

Recommendations:
That the Regional and Local Old Growth Working Groups:

- interact with the Provincial Old Growth Working Group to share information and provide data for the analysis of old growth issues at each level;
- employ guidelines for public involvement and negotiation. Where an impasse occurs in the consensus process at lower levels it will be referred to the Regional or Provincial Old Growth Working Group for resolution;
- identify representative old growth forests required to complete a system of old growth conservation with priority emphasis on scarce ecosystems and species habitat and apply tools of the conservation framework to select potential reserves;

- ensure that a process using the conservation framework as a model is in place to:
  - apply the landscape planning process in a manner compatible with the conservation framework;
  - account for and consider values associated with old growth forests before Management Working Plans (or their equivalent) and the associated AAC's are accepted;
- be responsible for providing the appropriate land use body with an impact analysis of all old growth values and development of options and recommendations – i.e., detailed impact analysis in reserve candidate areas (see Section 7.3.1.);
- consult with higher level Old Growth Working Groups to develop options and recommendations for management designations for the conservation of old growth values;
- monitor, evaluate and co-ordinate approved designation and management recommendations at appropriate management levels.

Sub-District Planning Processes

The need for sub-district planning processes will be determined by regional and local land use bodies. The planning process would occur within a sub-district planning unit which is the forest land base worked or managed by or for residents of a community. In each sub-district planning unit, Management and Working Plans and 5 Year Development Plans would be prepared with a harvest schedule and resource analysis that incorporates the landscape-level planning process and the conservation framework outlined in Chapter 7. These plans, as well as any equivalent or associated plans, would still be prepared with local input and reviewed locally, as is now required for a variety of forest tenures.

Recommendations

Where Regional and Local Working Groups designate a need, each sub-district planning process would:

- ensure that an acceptable process to account for values associated with old growth forests has taken place before the Management and Working Plan and associated AAC is accepted within the sub-district planning area;
- review and recommend approval of licensee development plans to the responsible agency;
- conduct an annual review and evaluation of progress in implementing the approved Development Plan;
- identify needs for special emphasis planning, which may require analysis and input from various resource specialists.

9. RESEARCH AGENDA

9.1 FOCUS

To accomplish the aims of the strategy, improved sources of information are required. The strategy presents an initial agenda for ecological research , forest inventory and socio-economic research.

9.2 ECOLOGICAL RESEARCH AND INVENTORY

A 3-year program of research and inventory is required to establish an information base essential for developing and implementing the Old Growth Strategy. The program will include these key tasks:

- conducting research to support working and ecological definitions of British Columbia's diverse old growth forest types;
- conducting inventory and mapping of old growth and its land use status;
- identifying gaps in representation within the ecological reserves, parks and wilderness systems;
- revising forest inventory procedures to gather additional old growth attribute data;
- investigating the functional importance of certain old growth attributes (e.g. snags, coarse woody debris);
- establishing operational trials and long-term research studies to assess specific practices for conserving old growth attributes in managed forests;
- increasing our understanding of organisms in British Columbia that are closely associated with or dependent on old growth forests;
- investigating appropriate reserve design criteria for maintaining viable ecosystems and populations;
- evaluating existing information to determine the importance of intact watersheds in a conservation strategy.

9.3 SOCIAL AND ECONOMIC RESEARCH

Old growth related socio-economic research is needed in the following areas:

- **Community stability**
  - Develop a definition and indicators of community stability.
  - Study opportunities for economic diversification.
  - Quantify key differences (such as income and longevity) between timber sector and other jobs.

- **Multiple accounts**
  - Improve and refine the methodology and information required for multiple accounts analysis.

- **Conflict resolution**
  - Study alternative methods for consensus-seeking negotiations and mediated planning, and estimate their cost-effectiveness.

- **Benefit/cost analyses**
  - Conduct benefit/cost analyses of various alternatives for management practices.

10. IMPLEMENTATION PLAN

Implementation of the Old Growth Strategy is intended to be phased in over a three year period. The following pages illustrate the structures, public involvement processes, and tasks involved in the proposed implementation timetable. These are outlined at the provincial, regional and local levels by year.

The tasks are listed with a notation indicating which technical team within the Specialist Task Force would be responsible for assisting the various levels of working groups in carrying out the assignments. The implementation plan outlines work on ecological and socio-economic research and inventory, and the framework for old growth conservation, including management practices. We recommend that the work be developed in an integrated sequence, in order of priority by year, and that a series of groups be charged with implementing the strategy (See **Figure 7**).

10.1 TERMS OF REFERENCE FOR GROUPS CHARGED WITH IMPLEMENTING THE STRATEGY

10.1.1 PROVINCIAL OLD GROWTH WORKING GROUP

- The purpose of the Provincial Old Growth Working Group is to implement the Old Growth Strategy.

- The membership shall consist of representatives from four ministries—Forests; Environment, Lands and Parks; Economic Development, Small Business and Trade; and Tourism — and stakeholder group representatives. The structure shall include an Interministry Management Committee (IMC), chaired by the Chief Forester, and a Specialist Task Force.

- The overall role of the group is to provide leadership, management, and technical assistance to provincial, regional and local groups involved in implementation activity, and to prepare overall recommendations to government.

10.1.1.1 *The Interministry Management Committee*

It is recognized that the IMC may be incorporated within the recently announced "Protected Areas Committee", but that the Management Practices element of the Old Growth Strategy must be maintained.

- The purpose of the IMC is to manage the process of implementation of the Old Growth Strategy on a day-to-day basis and to make such recommendations to government as are required to ensure that implementation proceeds in a timely manner.

- Membership on the IMC shall consist of senior resource ministry staff appointed by their respective Deputy Ministers.

- The role of the IMC is to set up the provincial, regional and local organization necessary to implement the Old Growth Strategy, to arrange for provision of funding and staff, to co-ordinate with other land use initiatives, and to recommend supporting actions to government where formal approvals are required.

10.1.1.2 *The Specialist Task Force*

- The purpose of the Specialist Task Force is to interpret the strategy to those charged with detailed implementation of its provisions, and to provide training, technical assistance and research.

- Membership on the Task Force will consist of professional staff from the resource ministries represented on the IMC. Staff will be appointed by their respective senior officials. Stakeholder groups will provide lists of candidates for participation in the Public Involvement Technical Team. Final selections of non-government members will be approved by the IMC.

- The Task Force shall consist of four technical teams: Research and Inventory; Conservation of Areas; Management Practices; and Public Involvement. The following abbreviations of the teams are used in the action timetables:
  - Research and Inventory—Ecological (Ecol. R&I), Socio-Economic (Soc.Econ.);
  - Conservation of Areas (C.o.A.);
  - Management Practices (Mgt);
  - Public Involvement (P.I.).

- The role of the Task Force will be to prepare the technical documentation, procedures and guidelines required by government ministries, regional and district resource agency offices, researchers and the public to implement the detailed action program specified in the Old Growth Strategy.

10.1.2 THE REGIONAL OLD GROWTH WORKING GROUPS

- The purpose of the Regional Old Growth Working Groups (OGWG) is to develop the operational guidelines necessary to implement the strategy within their regions.

- Membership on the Regional Working Groups shall consist of senior staff members of the resource agencies represented on the IMC, as appointed by their respective Regional Managers. Stakeholder group representatives will be appointed according to IMC guidelines, as recommended in Section 5.2.2.

- The role of the Regional Working Groups will be to prepare the working terms of reference for implementing the strategy within districts; to conduct those studies for which a regional perspective is required; to assemble, for the IMC, recommendations for old growth reserves; and to ensure the process of public involvement engages stakeholders in planning and implementing the strategy. The Working Groups will be assisted by the Specialist Task Force technical teams.

10.1.3 THE LOCAL OLD GROWTH WORKING GROUPS

- The purpose of the Local Old Growth Working Groups is to implement the detailed provisions of the strategy which require action at the local level.

- Membership on the Local Working Groups shall consist of resource management and planning staff appointed by their respective District or Regional Managers. Stakeholder group representatives will be appointed according to IMC guidelines as recommended in Section 5.2.2.

- The role of the Local Working Groups is to conduct inventories, prepare maps, identify potential reserve areas, ensure the incorporation of management practices into operations, convey economic and social implications to the regional level, and engage the stakeholders in local planning processes as required. The Working Groups will be assisted by the Specialist Task Force technical teams.

PROVINCIAL LEVEL

Year One Structures	Year One Public Involvement Process	Year One Priority Tasks	Team
Provincial Old Growth Working Group established	Old Growth Strategy circulated for public comment	Revision of Old Growth Strategy document	P.I.
	Form stakeholder advisory group to IMC	Identify and refine processes for socio-econ. research	Soc. Econ.
IMC (Protected Areas Committee) as Management Unit for Old Growth process and inter ministry cooperation		Establish resolution process for short term deferrals	C.o.A.
		Begin research on community stability issues: • identification of socio-economic dependencies • identification of socio-economic alternatives	Soc. Econ.
Specialist Task Force teams established		Publish guide to building consensus for distribution by IMC to Regions and Districts	P.I.
		Refine and publish conservation framework tool kit: • for reserve system design and evaluation • options development and analysis • identify responsibilities for regional and district staff	C.o.A.
		Publish interim report on OG associated species	Ecol. R&I
		Obtain OG inventory data from TFL and private lands	Ecol. R&I
		Complete provincial maps of older forests	Ecol. R&I
		Refine interim working definitions for old growth	Ecol. R&I
		Complete digitizing of the eco-region and biogeoclimatic map units across the province	Ecol. R&I
		Review and publish discussion paper on functional significance of intact watersheds and conservation	Ecol. R&I
		Publish interim guidelines for the inventory data base to include OG attributes	Ecol. R&I
		Begin dev. of ranked lists of scarce ecosystems, OG dependent species & habitats; produce interim report	Ecol. R&I
		Develop goals for reg. landscape planning framework	Mgt.
		Begin work to meet OG management practices requirements	Mgt.

	Year One Structures	Year One Public Involvement Process	Year One Priority Tasks	Team
REGIONAL LEVEL	Regional Old Growth Working Groups established	Conduct educ. and technical review briefings with resource management practitioners	Provide information to Conserv'n of Areas Tech. Team for assessment of existing deferral areas; co-ordinate deferral assessments at local level	C.o.A.
		Public comment collected to be used in Strategy revisions	Regions and districts begin identifying OG forests rep. of scarce ecosystems and species habitat	Ecol. R&I
		Adaptation of existing planning processes to incl. stakeholders and incorp. O G values	Develop guidelines for landscape planning	Mgt
		Incorporate consensus into planning processes	Begin site-specific testing of OG mgt practices using concept of adaptive management	Mgt
			Investigate growth & yield implications of alt. forest mgt practices for maintaining & creating OG forests	Mgt
	• • •	• • •	• • •	
LOCAL LEVEL	Local Old Growth Working Groups established	Conduct educ. and technical review briefings with resource management practitioners	Assess existing deferrals using CoA Tech Team criteria, with regional and provincial co-ordination	C.o.A.
		Public comment collected to be used in Strategy revisions	Begin site-specific testing of OG mgt practices using concept of adaptive management	Mgt
		Adaptation of existing planning processes to incl. stakeholders and incorp. O G values	Begin identifying OG forests representative of scarce ecosystems and species habitat	Ecol. R&I
		Incorporate consensus into planning processes	Begin dev. and testing of prescriptions for forest mgt practices to conserve OG attributes at the stand level	Mgt

	Year Two Structures	Year Two Public Involvement	Year Two Priority Tasks	Team
PROVINCIAL LEVEL	Old Growth Working Group in place	Conduct public involv. process on Strategy implementation with Old Growth Working Groups	Establish interim pattern of OG reserve proposals at the distict level, based on info gathered from regions and districts	C.o.A
		Prepare public and gov't interim report on status of Old Growth Strategy implementation	Publish interim report on the extent of OG representation in existing reserves	Ecol. R&I
		Develop criteria for selection of stakeholder group representation	Prepare interim list of rare and threatened OG ecosystems requiring reserve representation	Ecol. R&I
			Publish final working definitions for OG and interim detailed ecological definitions	Ecol. R&I
			Publish final report on the role of watersheds as conservation units	Ecol. R&I
			Ongoing research on community stability issues	Soc. Econ.

	Year Two Structures	Year Two Public Involvement Process	Year Two Priority Tasks	Team
REGIONAL LEVEL	Regional Old Growth Working Group in place	Conduct public involvement process on Strategy implementation with OG Working Groups	Begin implementation of socio-econ field research	Soc. Econ.
			Field test the inventory guidelines	Ecol. R&I
		Education on consensus-building negotiation and facilitation	Develop Regional Landscape Planning Framework • set objectives for landscape and stand units • integrate OG obj's and other resource value obj's • identify and quantify vegetation types	Mgt
			Continue identifying forest types and associated OG attributes in each region as detailed in year 1	Mgt
			Continue identifying OG forests rep. of scarce ecosystems and species habitat; apply tools of Conserv. Framework to select potential reserves	C.o.A. & Soc. Ecor
	. . .	. . .	. . .	
LOCAL LEVEL	Local Old Growth Working Group in place	Conduct public involvement process on Strategy implementation with OG Working Groups	Begin implementation of socio-economic field research	Soc. Econ.
			Continue identifying OG forests rep. of scarce ecosystems and species habitat	Ecol. R&I
		Education on principled negotiation and facilitation	Begin to implement the Landscape Planning Process at the local level	Mgt

	Year Three Structures	Year Three Public Involvement Process	Year Three Priority Tasks	Team
PROVINCIAL LEVEL	Provincial Land Use Body assumed to be in place	Conduct the continuing public information, education, and involvement process with OG working group and prepare final reports for the public and government Facilitation of full representation of stakeholder interests in Land Use Body Consensus mechanisms in place	Incorporate OG reserve system plan into all other prov. land reserve systems	Co.A.
			Identify the social and economic dependencies associated with the reserve framework	Co.A. & Soc. Ecor
			Prepare final report on OG representation in existing land reserves	Ecol. R&I
			Obtain fed. and prov. land inventory information	Ecol. R&I
			Publish status report on OG-associated species	Ecol. R&I
			Finalize reg. maps of older forests at 1:250,000 scale	Ecol. R&I
			Begin reinventory of integrated, digitized data base	Ecol. R&I
			Complete regional digitization of biogeoclimatic zones and ecoregions	Ecol. R&I
			Establish a final list of rare and threatened OG ecosystems that require reserve representation	Ecol. R&I
			Refine OG definitions and publish first draft ecological definitions	Ecol. R&I
			Incorporate OG attributes into the regular inventory procedure	Ecol. R&I
			Report on the growth and yield implications of mgt practices designed to conserve OG attributes	Ecol. R&I

	Year Three Structures	Year Three Public Involvement Process	Year Three Priority Tasks	Team
REGIONAL	Regional Land Use Body assumed to be in place	Conduct the continuing public information, education, and involvement process with OG Working Groups and prepare final reports for the public and government	Conduct benefit/cost analyses on the specific forest management practices being recommended for application to conserve OG attributes	Mgt & Soc. Ecor
		Facilitation of full representation of stakeholder interests in Land Use Body	Preliminary assessment of growth and yield implications of mgt practices to preserve OG attributes	Mgt
		Consensus mechanisms in place		
	. . .	. . .	. . .	
LOCAL	Local Land Use Body assumed to be in place	Facilitation of full representation of stakeholder interests in Land Use Body	Set AAC for each landscape unit to determine combined AAC for encompassing landscape unit	Mgt
		Consensus mechanisms in place		

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13. GLOSSARY

BIODIVERSITY: the variety of life forms, the ecological roles they perform, and the genetic diversity they contain.

BIOGEOCLIMATIC ZONE: a large geographic area with a broadly homogenous macroclimate. Each one is named after one or more of the dominant climax species of the ecosystems in the zone, and a geographic or climatic modifier. British Columbia is divided into 14 biogeoclimatic zones.

CLIMAX: in ecology, refers to a condition of dynamic equilibrium, a steady state rather than a static endpoint. A climax ecosystem is in theory a stable, permanent occupant of the landscape, self-perpetuating unless disturbed by outside forces or modifying factors.

COMMODITIES: products such as wildlife, forage, timber, water and fish that can be extracted for human use; anything that can be harvested or otherwise used and inventoried in the economic sense, thereby allowing targets to be set for production or conservation.

COMMODITY EMPHASIS: management that gives priority emphasis to commodity use but which may include maintenance of specific old growth attributes.

CONSERVATION: the protection and use of natural resources according to principles that will assure the greatest benefits to human society and the environment, now and into the future.

CRITERIA: standards, rules, or principles on which judgements or decisions can be based.

ECOREGION: ecological units based on climate and physiography.

FAUNA: all of the animals found in a given area.

FLORA: all of the plants found in a given area.

FRAGMENTATION: refers to habitat fragmentation: (1) reduction in total habitat area (which affects population sizes and therefore extinction rates); and (2) redistribution of the remaining area into distinct fragments (which affects dispersal and therefore immigration rates).

INTEGRATED RESOURCE MANAGEMENT: a process which identifies and considers all resource values, along with social, economic and environmental needs, with the goal of resource stewardship guided by the principle of sustainable use.

LANDSCAPE LEVEL: the level of forest management which deals with the extent and relative distribution prescriptions and treatments within several adjacent stand-level units.

LANDSCAPE-LEVEL PLANNING: the objective of landscape-level planning is to reflect the desired extent and relative distribution of old growth attributes over a specific area. Landscape-level units are ecologically determined and are made up of several homogeneous stand-level units, within existing management designations (TFL's or TSA's)

LANDSCAPE UNIT: ecologically determined planning units which are defined within management units (TFL's/TSA's) and which are made up of a series of smaller stand-level units.

MULTIPLE ACCOUNTS ANALYSIS (MAA): a method of socio-economic evaluation that accounts for both measurable and non-measurable benefits and costs, and compares the impacts of different objectives on several socio-economic features or accounts.

PRE-HARVEST SILVICULTURE PRESCRIPTION (PHSP): a planning system that collects site-specific field data and develops forest management prescriptions for cut blocks in advance of logging.

PRESERVATION: full protection of natural ecosystems.

PRINCIPLED NEGOTIATIONS: a method of negotiation explicitly designed to solve problems and achieve decisions that meet the needs of all parties involved. The focus is on attempting to meet the interests of people by formulating a number of options before deciding what to do, and basing results on objective standards agreed to by all the involved parties.

RARITY: an expression of the size of a population related to its range.

REPRESENTATIVENESS: an expression of how common or likely to occur a particular ecosystem is.

RESERVES: areas protected for their old growth values.

SCARCITY: an expression of how much of an ecosystem remains relative to (1) the area already harvested, (2) the rate of change, and (3) the area required to sustain all ecosystem attributes of that forest type.

SPECIAL MANAGEMENT: management that protects and sustains certain old growth attributes, while allowing compatible use for other values.

STAND LEVEL: the level of forest management at which a relatively homogeneous land unit can be managed under a single prescription, or set of treatments, to meet well-defined objectives.

SUSTAINABLE DEVELOPMENT: "development that meets the needs of the present, without compromising the ability of future generations to meet their own needs;....improving the quality of human life while living within our ecological means. " (World Commission on Environment and Development)

TOOL-KIT: the information, guidelines, analytical tools, and procedures for generating a comprehensive old growth conservation framework. Includes the reserve system design, biological, social and economic data, evaluation criteria, and procedures for analysis.

VALUES: the properties of an object or system which give it importance, utility or worth.

(Detailed references are available in the Old Growth Strategy Background Papers.)